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BEFORE COLUMBUS

FRANCIS ROLT-WHEELER



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Romance-History of America: I

IN THE DAYS
BEFORE COLUMBUS

FRANCIS ROLT-WHEELER

By FRANCIS ROLT-WHEELER

Round the World with The Boy Journalists

PLOTTING IN PIRATE SEAS

HUNTING HIDDEN TREASURE IN THE ANDES

Romance-History of America

IN THE DAYS BEFORE COLUMBUS

THE QUEST OF THE WESTERN WORLD

NEW YORK: GEORGE H. DORAN COMPANY



WHEN AMERICA WAS YOUNG

The first inhabitants of America not improbably belonged to the cave-man stage of culture and lived a life of constant warfare with ferocious beasts of prey.

IN THE DAYS BEFORE COLUMBUS

BY

FRANCIS ROLT-WHEELER

Author of "The Quest of the Western World," "Plotting
in Pirate Seas," "Hunting Hidden Treasure in the
Andes," "The Boy with the U. S. Cen-
sus," "The Aztec-Hunters," etc.

With a Frontispiece by

C. A. FEDERER

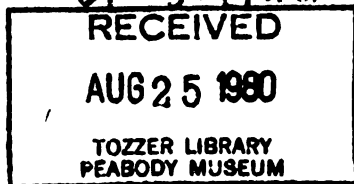
*And Many Illustrations
and Maps*



NEW YORK
GEORGE H. DORAN COMPANY

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GIFT OF STEPHEN WILLIAMS



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FOREWORD

THIS introductory volume to the Romance-History of America endeavors to present in concise form the vast body of information which has been gathered concerning the continent and people of America prior to historic times.

Of necessity, the scope is over-inclusive to admit of detail, yet the purview is designed to be broad enough to show the unity of the continent of America and to reveal an unbroken continuity since geological times.

The succeeding volumes will deal with the Historic Period, and America will be treated throughout, not as a detached and isolated phenomenon, but as a part of the great whole of the World of Men, by which she has been influenced, and which, in turn, she influences. Nations, like individuals, do not "live to themselves alone."

PREFACE

THRILLING is the Romance of America! In no period is its history more thrilling than in the wild days of long ago, the days before the Cave-Man and the days of the Cave-Man. Wonderful is her Ancient History, not less amazing than the Ancient History of Asia and Africa, and fully as vivid as the Ancient History of Europe. Marvelous are her forgotten civilizations, of which those of the Mayas, Aztecs and Incas, compare with the Egyptian, Assyrian and Babylonian.

Of what can the ancient civilizations of the Eastern Hemisphere boast more than those of the Western? If Maya art and architecture was less graceful than Greek art and architecture, it was not less imposing, and it was certainly more strange. The famous Roman roads cannot compare in daring of conception with the vast Inca roads amid the towering peaks of the Andes, and Inca law was even more equitable than Roman Law. The pomp of Montezuma, the Aztec emperor, compared with that of the Pharaohs.

The myths of the Aryan peoples have become the fairy tales of the world, but they are not more filled with fantasy, adventure and romance than the myths of the North American Indians. And,

if one seeks for mystery, it will be vain to search in any corner of the world for greater prehistoric works than those of the Mississippi Valley, of Arizona, of Yucatan and of Bolivia.

There is grave error in the regarding of the Americas as a land first discovered by Europeans in the fifteenth and sixteenth centuries. It was not, then, a New World. On the contrary, the continent had possessed a rich and varied human life for thousands of years. Nor has this indigenous life died out. The native races of the two Americas still number many millions. The blood of the red man has intermingled with the white, more, far more, than most people realize.

Even the culture of those prehistoric peoples has left its mark. Corn and potatoes have become staple foods of the world. Tobacco has passed into general use. The blanket coat and various types of footwear have been adopted by white hunters in the north. Indian snowshoe and canoe patterns have been translated into modern forms.

More significant than all these—the recognition that Indian life produced a fine type of manhood and womanhood has brought into being a new educative force for the training of the child of to-day. In this, Boy Scouts, Girl Scouts and similar out-of-door organizations hold an important place. The boy or girl who “goes Indian,” the man or woman who goes “camping,” bear testimony to the value of free life in the open. It is not to be forgotten that this kind of life developed the

Ancient American, as, today, it develops the modern American. The forest is a better teacher than the slum.

Ancient America was different from Ancient Europe. The natural forces which produced this difference aforetime, continue still. The European "discovery" did not alter the soil, the climate nor the geography of America. History is but a poor thing when it becomes a mere record of facts, without showing what brought these facts into being, and what made them live.

Long, long ago, it was said, "He hath made to be of one blood all the peoples of the earth." Today, Science and History repeat that statement with greater and greater emphasis. The Brotherhood of Man is a reality, and knows no barrier of period, color or creed, neither has it anything to do with any political theory.

In no part of the Eastern Hemisphere is there to be seen a richer or more amazing human development than took place on this continent. American patriotism must be based on what America is, not on what she has. Pride is better than property. American heritage is even more glorious than many Americans have felt or known. To deepen the springs of patriotism and heighten its expression, is the aim and purpose of these books.

F. R.-W.

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**IN THE DAYS
BEFORE COLUMBUS**

IN THE DAYS BEFORE COLUMBUS

CHAPTER I

THE MAKING OF A CONTINENT

IN the absolute cold of Space, where a great spiral nebula threw its whirling arms of star-dust over a million leagues of Ether, the United States was born.

Even in those distant days, billions of years ago, the flecks of star-dust danced and swung together in obedience to two great laws—the laws of friendship and of hate. Scientists call these the laws of attraction and repulsion. When the world was in the making, these laws determined where and what the continent of North America should be. Today, these laws act upon the lives of men and produce the events of history.

All worlds, all continents, all countries and all people are neighbors. Yet—all worlds, all continents, all countries and all people differ. In this conflict of neighborliness and difference lies all the storied history of the United States, as of every nation in the world.

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It is one of the glories of America that it is not a recently discovered fragment of the Earth, but is an integral and important part of it. The navigators of the Middle Ages did not make America, they only found it. To lose sight of this continent-kinship is to misinterpret history, to misunderstand the country's loves and hates, its triumphs and its disasters. Modern History traces the links of human conflicts back to physical origins.

The Universe is the dueling-ground of two terrific combatants. The duel is eternal, without rest and without quarter. These duelists may take on forms as great as the disruption which hurls two suns into a flaming collision and spreads the pieces so far apart that a hundred million years may elapse before they begin to come together again; or as great as the friendly force of gravitation which holds the planets of the Solar System obedient to a daily path. Again, these duelists may show themselves in dwarfish shapes, personifying, on the one hand, the quarrels which lead to hate and war, and, on the other, the mutual esteem and comradeship which result in peace.

Thus, if the verdict of history from the beginning of Time may serve as a clue, disruption and attraction, or strife and friendship, will always be mingled in the world. Without this balance of contending forces, the Universe could not exist. Without it, human life would be dull and meaningless.

The world of today is always bigger than the

world of yesterday, for, with the advance of knowledge, the horizon widens and the minds of men see far. The young American of the Twentieth Century must necessarily possess a broader view of life than a young Greek of the days of Socrates, even as the latter had a larger vision than a young cave-man in the Age of Stone.

Whence came the United States? Out of the continent of North America.

And whence came the continent of North America? Out from the ever-changing crustal formations of the Earth in the making.

And whence came the Earth? Out from a loosely organized mass, either a vast cloud of thinly divided gas, a swarm of meteorites, a mist of incredibly small liquid spheres, or a haze of microscopic dust.

And whence came this loosely organized mass, which became the Earth? From the Ether, a frictionless fluid of vast energy, in which lay whirling constellations like to the stars of the sky in number and arrangement, but so small that 30,000,000,000,000 would find room to rest on the head of a pin; with this Ether, Space is full. (This statement is not affected by Einstein's special or general relativity theories, which deal with non-Euclidean conceptions of Space, four-dimensionally considered.)

There is a dramatic fury in the picture of the birth of a world, a rushing of gigantic forces which, even to think of, catches the breath.

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First, the Ether, everywhere, dense and elastic, able to transmit quivering pulses of light, heat and electricity at tremendous speeds, but itself absolutely transparent and without weight. In the Ether, myriads of little whirlpools tugged within themselves and on each other, causing different stresses or pulls, which, in turn, led to the making of the shapes of things in the world that was to be.

Invisible whirlpools of apparent nothingness, yet which were to become the great stars and suns of the Universe—where is to be found a magic greater than theirs? During the ages that passed as they whirled in their wild dance amid the sky, they condensed slowly and formed the tiny systems of worlds known as atoms, so small that even the most powerful microscopes cannot make them visible.

Years, centuries, eons elapsed, and the atoms, grown to molecules, began to cling together to form a nebula. Where had been nothing before but the eternal dark and the eternal cold, soft light began to gleam and friction caused warmth. A strange and ghostly thing, was this nebula, with the matter of which it was made so thinly spread that a thousand acres of it would make less than a heap of dust which could be held in the palm of the hand.

The world's earliest history was that of the slow formation of the nebula into one great central mass, or nucleus, while, at the same time, outly-

ing wisps of nebulous matter began to concentrate upon themselves. Then, in slow and awful grandeur, the whole mass—still filmy and cloud-like—began to revolve upon itself, the outer nuclei remaining still connected with the central body, until the heavens saw a new splendor with spiral arms newly lighting the sky.

Closer and closer together grew the particles, denser and denser grew the central body and the spiral arms, until, in the course of hundreds of millions of years, the core became that mass of the most terrific heat known to the Universe—a blue-hot star. Again hundreds of millions of years passed, and, little by little, the sapphire-colored orb grew to an even more dazzling brilliance, that of a blue-white star.

In other parts of the sky, stars may be seen which have grown older still, and cooler still, which have declined from blue-white to yellow-white, thence to yellow, thence to orange, thence to cherry-red, thence to dull red, then to extinction, while it is known that there are thousands of dark stars careering in the sky.

It was while the core of the nebula which became this Solar System was passing from the nebulous to the blue-hot stage that the outer nuclei began to concentrate on themselves.

One may seem to see, luminous across the sky, that great spiral nebula in which the center was condensing into the blue-hot Sun. As yet the center had no outline. Flaming gases, with tongues

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of fire that licked up a thousand miles of Space, surrounded it. Wisps and veils of luminous matter drifted over and across it. The roaring tornadoes of a world on fire and the incessant clamor of gigantic explosions passed unheard, for there was no ear to hear them. In the immeasurable void, and in the silence of the sky, the Sun was forming.

Far-flung from this center, tangled and caught in these swirling cloud-masses of gleaming dust, were nine knots, or clumps, of matter dense enough to attract the lighter particles around them. These clumps, or knots on the spiral arms, rotated around the blue-hot center at the exact speed which would cause their centrifugal (or outward-flung) motion to counterbalance their gravitational (or inward-drawn) motion, and keep them at a circumscribed distance. Thus were the orbits of the planets formed.

Even then, attraction or repulsion, or friendship and hate, played their parts. Gravitation sought to draw these nuclei to the central core; the whirling speed of centrifugal force, as they revolved, sought to throw them further from the Sun. The balance between these forces held them true. It holds the Earth, still.

Of these knots, or nuclei, there were nine. Some were large, some small; some near the central core, others far away. The mathematics of Astronomy shows that the two great opposing forces held these nuclei at distances increasing at a defi-

nite ratio. These are the distances from the Sun at which the planets revolve.

What place did America hold in these nine nuclei? Her origin was in the third nucleus outward from the center. The two inner nuclei condensed into the planets Mercury and Venus. The third became the Earth. The outer five developed into Mars, Jupiter, Saturn, Uranus and Neptune. Some wisps of disrupted or homeless matter still wander in the form of thousands of small masses between the orbits of Mars and Jupiter, and are known as the Planetoids.

The planets, as they now appear, favor the foregoing or nebular theory. Mercury is a bleached and sun-cracked desert. Venus is probably a region of super-tropical heat on its face continually exposed to the Sun, an ice-field on its dark side, and exposed to terrific hurricanes beneath its never-pierced veil of cloud. Mars, further from the Sun than the Earth, and small in size, is possibly habitable and may be inhabited, though the "canals" are matters of dispute. Jupiter, owing to its large size, should be red-hot still, and the evidence of the "red spot" seems to show that it is. Saturn, with its belts, its ten moons and its flattened poles, suggests that its condensation is not yet finished, and the spectroscope (an instrument by which light can be split up and examined) reveals that Saturn still emits internal light. Around Uranus nebulous shreds yet cling. Neptune is too far and too dim for

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sure examination, but its envelope of gases adds weight to the nebular theory.

The Earth, the third nucleus outward, began to form while the Sun was still in the blue-hot stage. Owing to its small size, it cooled rapidly, the outside cooling first. Thus a crust was formed, but this, at the beginning, was barely more than a thin scum on a molten mass. Cooling continued, and the crust became thicker, only to be continually riven and cracked into a thousand tortured forms by the surging white-hot lava from below. The only oceans were seething expanses of unformed and melted rock, white-hot and blue-hot. Solid ground there was none. Elements in torment, the cooling surface of the earth and the molten interior warred together for hundreds of millions of years.

The proof of this great battle, which must have taken place to the accompaniment of the continuous roaring of tens of thousands of volcanic eruptions under a fire-lit red sky, is seen in the fact that the deepest and oldest section of the oldest rocks (Archæan), far down in the Earth's crust, are mainly volcanic.

It was at this time, too, that the Moon was born. The molten liquid Earth was spinning at least six times faster than now, the day being less than four hours long. So high a speed of rotation of matter so unstable caused a deformation in the Earth's shape, and by centrifugal action the bulging portion was thrown forth. Many scien-

tists claim that the deep bed of the Pacific Ocean is but the hole remaining after the Moon had been torn out of the Earth.

So, little by little, the crust formed, and the battle took new shape.

Dense gray clouds covered the Earth, clouds through which most of the heat of the Sun would pass, but which allowed no ray of sunlight upon the slowly hardening crust. These clouds consisted of gases, and, of these, oxygen and hydrogen combined at a fitting temperature to form water. For the first time in the world's history, rain fell. To begin with, it did not reach the surface, but was evaporated and sent back to the clouds by the current of super-heated vapors rising from the fiery Earth. Later, as the crust cooled more, the rain fell on the heated rocks, only to be sent up again in hissing steam.

Again, throughout long ages, came a warfare of giants, with the ever-growing water in the atmosphere as one contestant, and the heated crust as the other. In time, the crust won the fight. It solidified sufficiently to allow a boiling, steaming ocean, which washed the shores of lava-made continents. Between the beds of the Pacific and Atlantic depressions lay a ridge. That was the continent of America.

(It is but right to point out that, according to the Planetesimal Theory, held by some eminent geologists, the heat of the primitive Earth must have been less than as here described. Advocates

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of this theory hold that the oceans were formed by the drawing together of molecules of water on the forming globe. They deny a super-heated period so early in the world's history. But this theory limps at many points, and, while it may some day be substantiated, the greater proportion of scientists clings to the older view.)

Already, these lava continents and hot oceans had begun to establish a few permanent features. The most decisive and enduring was the division of a greater proportion of land mass north of the equator, and of ocean basins south of the equator. To throw forward in time a little, it will be seen that this division, in the very primal days of the world's history, determined that North America should have commercial sway over South America, and Europe over Africa. The history of the present is ever linked to that of the past.

The second great physiographic feature of the Earth as a whole was the projection southward of three great tongues of land. These were the triangle of South America, ending at Cape Horn; the triangle of Africa, ending at Cape of Good Hope; and the triangle of Asia, through Malaysia and Australia. America and Asia, at various points in geological time, joined the continent of Antarctica.

While, during geological ages, these land masses changed shape many times, none the less a certain proportion of bulk remained, and, viewed as a whole, they separated the oceans into three great

basins, the Pacific, the Atlantic and the Indian. The South Atlantic and the South Pacific are the deepest of these. Thus, the continent of America is very old. The date of this first clear division between land and sea is variously estimated at from fifty to one hundred million years ago.

The first great battle in the age-long struggle which sculptured the land and sea surface of the Earth had been between the interior of the planet and its cooling crust; the second battle had been between the cooling crust and the water-laden atmosphere; the third battle—which is not yet ended—is between the sea and the land.

The history of North America as a continent—after its first formation—is told in the layers of rocks which lie one upon another, underfoot. It is a strange tale. Its many chapters tell of a world utterly unlike the world of today, of grotesque shapes in the sea and uncouth monsters on the land, of scene-shiftings so stupendous that the changes are bewildering. Yet it is a true tale, and, as though to prove its truth, in every stratum or layer of rock, from the lowest to the highest, the creatures who lived during those successive scenes have left their remains as mute witnesses to its verity.

The process is not yet over. The soil Man treads today, on which he walks, through which he plows, and below which he quarries or mines, will become a rock, millions of years hence. The descendants of the present human race will find

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the bones of animals of today, the cities of today, and such handiwork of Man today as is, by the nature of it, imperishable. The Earth tells her own history and never ceases telling it.

Away, away down, lie deep masses of obscure volcanic matter, the lowest rocks of the Archæan Era, which is the oldest of the five great geological eras. (These rocks are called Laurentian, because they appear above the surface in the St. Lawrence River Valley.) These were fire-made rocks, possibly containing a part of the original crust, but smashed and changed by volcanic action, and washed and eroded by the boiling ocean. There was life in that hot sea, possibly, a swarm of tiny sea-creatures, but of so simple and primitive a kind that it left no remains. The lower Laurentian Period belongs to the Azoic or No-Life Age, the upper Laurentian witnesses the coming of life and hence belongs to the Eozoic or Dawn-Life Age.

During the next Period (Keewatin, so named after a district in Canada, west of Hudson Bay), steam ceased to rise from the ocean. The sea was cooler now. In the rocks which have been made of the deposits on that sea-bed of long ago, the geologist finds seams of coal-like carbon. These tell that a dense sea-weed jungle covered the bed of the ocean. Probably, since there was marine vegetation, there was marine animal-life to feed on it. But, if such creatures lived, their frames were too frail to leave any sure trace,

though some primitive sponges undoubtedly existed.

Cooler and cooler grew the crust, and it raised itself boldly above the sea, which, now, was growing cold. The change took millions of years, but when the next Period (Huronian, so named after the region occupied by the Huron Indians), was half over, Western North America was under an ice sheet. Truly a mighty change of scene since the days when the rocks were red-hot and the ocean was a-boil! Yet the crust was still too thin to support the mass of ice and rock, and fresh floods of molten matter poured up from the depths below, as the land sank.

None the less—to carry on the picture of the great battle—the crust, while checked, was not conquered. It struggled upward from the clutch of the sea. During the next Period (Keweenawan—from Keweenaw Bay on the Michigan shore of Lake Superior), there came a steady uplift of the land. It took a long time, a million years, maybe, but the elevation was continuous. The sea retreated, leaving shallow shores on the edge of the continental shelf. There, a sluggish worm-like population burrowed in the mud, attached itself to the rocks, or crawled among the submarine thickets of sea-weed.

Thus rose and grew the continent of North America. Many changes were to follow. There would come a time when nearly all the land would be lost to view, only a few islands appearing above

the surface of the sea; there would also come a time when mountain ranges would mount towards the sky, far higher than those of today. But, in general, the continental shelf maintained the outline it had won at the close of the Archæan Period.

The history of life in North America may be divided into five great Eras. The first or earliest of these was the Archæan Era (including Azoic=No Life and Eozoic=Dawn Life). The second was the Primary (Paleozoic=Old Life), which began with the close of the Archæan Era and ended with the Permian Catastrophe. The third was the Secondary (Mesozoic=Middle Life), which began at the close of the Permian and ended with the Cretaceous Catastrophe. The fourth was the Tertiary (Cenozoic=New Life) which began at the close of the Cretaceous and closed with the Pleistocene Catastrophe, better known as the Ice Age. The fifth is the Quaternary (Psychozoic=Mind Life), which began with the close of the Ice Age and the end of which is yet far in the future.

The Primary Era began in its first Period (Cambrian—from Cambria, an ancient name for Wales) with the land raised high above the ocean. As yet there was neither plant nor animal on land, nor were there any fish in the sea. All life was marine, consisting largely of worm-like creatures, star-fish fixed to rocks by plant-like stems, and the primal ancestors of primitive shell-fish. The trilobite, ancestor of the Crustaceans (lobsters, crabs, shrimps, etc.), by reason of his hard shell, left

his remains by millions in the rocks of the Cambrian Period.

What part of the North American continent was above water at this time? Mainly a square-shaped island, the northern shore of which ran from the north of Greenland to the Mackenzie River; the western shore running from the Mackenzie through the western border of the Dakotas to the western border of Texas; the southern border passing through Georgia; while the eastern shore was roughly the same as that of North America today.

But the Cambrian Period was a time of heavy erosion, of violent rains and terrific hurricanes. The lighter rocks soon washed away into the sea. As the area of land decreased, the expanse of shallow sea increased. Before the Cambrian ended, the continent had submerged until Greenland was a marsh, Eastern Canada a low-lying plain, and all the United States was under water except a small island a couple of hundred miles square, in Colorado.

After a fall must come a rise, so the law of pressures (isostasy) declares. In the next Period (Ordovician—from the Ordovices, a Welsh tribe) this began. The shallow water ran off the rising land, the shores narrowed. The continent reappeared, but was curiously divided. An arm of the Pacific Ocean lay over Nicaragua, joined the Gulf of Mexico, occupied the valley of the Mississippi and joined the Atlantic by way of the depression

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which is now the St. Lawrence River. On the eastern side of this arm of the sea, the South American continent was prolonged, making solid land of all the Caribbean and West Indies islands, taking in all the eastern continental shelf as far north as Cape Cod. The western half of the continent began at Southern California and spread northwards in a triangle, the base of which stretched from Alaska to Greenland.

Again the sea began to win, in this great battle of the ages. The narrow belt of sea, which crossed America diagonally, widened. All the southern states soon were under water, and the prolongation of South America appeared as a narrow ridge, a thousand miles long. The western area next was cut into three parts. By the end of the Ordovician, North America was an archipelago, the only five large islands being Greenland, Eastern Canada, the Mackenzie River country, the Carolinas, Tennessee and Arizona.

The next Period (Silurian—from the Silures, a Welsh tribe) showed less alteration in the land, so far as North America was concerned, but made great changes in the sea. The swift currents which scurried over the barely submerged land changed their directions, altering the locations of the sediments laid down. These sediments, to-day, are a part of the soil of America.

Life, too, was speeding up. These shallow warm seas had given an opportunity for marine creatures to develop. The first tyrant of the waters



Courtesy of The American Museum of Natural History.

THE TYRANOSAURUS ADVANCING TO ATTACK A FAMILY OF TRICERATOPS.

In the swamps and over the low plains of Jurassic North America, crawled, waddled, lurched or ran that nightmare race of Giant Reptiles, many of uncouth size; the race displayed a fantastic variety of shapes and has been named accordingly. Some were small and nimble, others ponderous, slow and given to lurking in swamps and lagoons. Nearly all were grass eaters, but the most terrible of them all was the great flesh-eating Dinosaur, the Tyrannosaurus.

came. This was a kind of shelled cuttlefish (*Orthoceratite*=straight shell) with a long shell, sometimes as much as fifteen feet long. The spiral-shelled types—of which the *Nautilus* is one of the few forms remaining today—appeared toward the end of this epoch.

A silver streak shot through the waters. An event which was to advance enormously the development of life occurred in the next Period (*Devonian*—from Devon, a county of England). This was the coming of the Fish. The first generation was a group of strange creatures, half-fish and half-crustacean (*Ostracoderms*=shell-skin). They had armored heads and could pursue their prey of shell-fish and marine worms into the ooze. But their jaws were of a poor pattern and they had no backbones. They soon disappeared, when, in Middle Devonian times, the early Fishes developed.

Alas for the inhabitants of the shallow seas and inland waters then! The Terror Fish (*Dinichthys*) did not belie its name. This formidable pirate of the early seas reached twenty feet in length, its huge head was armored, and its great jaws were shaped to close on a victim like a pair of sharpened nippers. Yet they, too, had their rivals, and even their betters. An even fiercer creature rose to demand and obtain supremacy. This was the Pavement-Toothed Shark. Small was the chance for the slow swimmer, then! The little fish which desired to escape the nippers of

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the one foe or the crushing jaws of the other, found their only chance lay in a development of speed.

Moreover, this Devonian Period, so famous for its murderous warfare in the seas, saw a great change on the land. Just as the sea-plants of the sea-bottom were the first organisms to leave traces of the existence of life in the rocks of the Archæan Era; so land-plants antedated land creatures, and they left the first traces of land-life; scantily in the Silurian rocks, plentifully in the Devonian. This was a time of salt-water marsh, gradually elevating and drying, with, now and again, slight sinkings. It was just the condition which gave sea-plants an opportunity slowly to accustom themselves to the land, and to become terrestrial.

Wonderful and amazing were the changes that the next Period (Carboniferous=coal-making) saw! Great forests of sullen and gloomy grandeur rose, somber trunks brooding over stagnant or slowly-running water. The sun—hotter than to-day—which poured down its burning rays upon them, stored in their tissues that heat of a by-gone day, creating a treasure-house from which has come all the riches of the civilization of modern time. For these were the trees of Coal, these were the forests of Coal, and the coal that today is dug out, deep in the ground, is but a compressed layer of the sucking and ill-smelling bog produced by the fall and decay of hundreds of generations

of trees over a period of tens of thousands of years.

Dark, dank and steamy, the marshes of the Carboniferous Period were just at or below sea-level. Owing to alternate small risings and fallings of the land, for centuries the surface was just above the water; for centuries, just below. Club-mosses a hundred feet in height, black lepidodendrons (scale-trees) of the same size, stumpy horse-tails six feet through, sucked up the marshy ooze, while ferns of every size, from trees to creepers, filled every inch of the boggy ground.

Amid these dull trees in a world of marsh, with a windless climate of drenching humid heat, there was no color of flower nor song of bird. The only movement in the air was that of the flying of fat-bodied locusts nearly two feet in length or of ill-smelling winged cockroaches. On the ground there was no color, but much movement, for sluggish salamanders crawled among the ferns and there was a savage and ruthless war of bloated spiders, elongated centipedes and scorpions of a dozen varieties. In the open waters, the Terror Fish and the Pavement-Toothed Shark began to disappear and even the great Sea-Scorpion grew scarce.

Striking as was this dark and lowering Coal-Tree world, a greater change than all these was coming to pass in the shallow waters below, dank and foul with rotting vegetation. Fish-like forms had begun to creep upon the land, ancestral lung-

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breathing creatures came, creatures who could live in water and in air alike, creatures, moreover, who bore to the land the backbones they had inherited from the highest Devonian fish. The slow-moving, dull-brained Amphibians came.

Fish-like, with tails and scales; they were animal-like, in the possession of legs. True, in most cases these limbs were but feeble supports, so that the Amphibians sprawled on the ground and raised themselves to crawl with difficulty. The water was still a kinder home to them. But some turned snake-like, others resembled modern alligators, and some even developed bony frames and sturdy legs, and were evidently eaters of land-snails and insects.

Part of the land, however, was too high for Coal-Forest growth, and part of it too far under water. Thus, while the forests spread over wide areas, they were restricted to those which possessed marsh conditions. The wealth of Pittsburg, today, depends on the fact that, millions of years ago, Pennsylvania was a tropical marsh on which the Coal-Trees grew.

Then came upon the Carboniferous forest, slowly but surely, the day of doom. The Permian (from Perm, a government near the Ural Mountains, in Russia) Period began. The moist, warm Earth began to lose its luxuriance. The tree-ferns died, the giant horse-tails shrank, the tall club-mosses became extinct. Stunted and woody trees appeared, whose small leaves told of starva-

tion. The awful clutch of devastation was closing upon the world. The great Permian Catastrophe drew near.

Slowly, slowly, over a period of centuries, the land regained its new territory. Marsh rose to bog, thence to dry land; shallow seas rolled back; great inland lakes dried up. Steadily and unhaltingly the land rose. All over the world, mountain ridges were upthrust. In North America it was the birth-time of the Appalachian Mountains. A new continent of enormous size (Gondwana Land) united Antarctica to America, Africa, India, and Australia. It was a time of high continental masses, and small, deep seas.

In the days of the Coal-Forest, much of the heat and moisture had been due to the large proportion of water-surface and the absence of high land to condense it. The pall of vapor stopped night-radiation and the world stewed in its heat.

But, as the land rose, the vapors condensed and the sharp pitch of the land produced swift rivers. Frigid blasts blew from the heights. The air grew clear, and colder, ever colder.

From Greenland—shortly before, covered with tropical vegetation—a great ice-sheet began to make its southward way. From Antarctica, enormous glaciers sent northward their icy tongues. Came snow and sleet, from the glaciated regions. Higher rose the land, colder grew the world. Death, robed in ice, clutched at the Earth.

The annihilation was stupendous. Before the

Permian Catastrophe there did not exist a single creature with warm blood, none with a coat of fur or feather, none that brooded over its eggs. The cold slew these inexorably. Most of the species had to die. Of the 10,000 plant and animal species which lived before the Permian Catastrophe, not more than 200 survived.

Greatest of all changes, greater even than the annihilation of the Coal-Forests, was the extinction of Amphibia. A few salamanders alone remain to show what their forebears were like when they were masters of the world. In their place came the Reptiles, primitive and clumsy at first, but potent with marvel. For, with the birth of the Reptiles, the mastery of the Earth passed from the sea to the land; and, from the clumsy reptiles of the Permian epoch were to emerge those masters of the air and of the land—the Birds and the Mammals.

As the Permian closed, the Middle Ages of the Earth began, the Secondary or Mesozoic Era. In the first Period (Triassic=three division) of this Era, North America attained the largest land surface of its early history. Inexorably, this was followed by erosion and leveling. The higher the relief of the land, the more quickly it is cut down. So, as the Triassic advanced, the mountains were worn away, the high plateaus were eroded by raging rivers and, everywhere the land grew lower. This, of itself, produced the return of a

more genial climate. The ice-fields retreated. The glaciers disappeared.

The stunted shrubbery which had managed to struggle through that Death-Age, gave place to forests again, but not such forests as those of the Coal Age. Cycads and conifers, the parents of the pine-trees, pushed forth their needle-like leaves. The insect world showed the effect of the terrible selection, and only the toughest types survived.

Two new tyrants arose in the Triassic seas, the Ammonite, a coiled-shell cuttlefish with a three-foot mouth, and the Belemnite, the direct ancestor of the modern octopus, with the shell rudimentary. Yet these, in the next epoch, were to fight a losing fight with forms grimmer and even more voracious than theirs.

World-domination passed landwards. From the light salamander types (Microsaurs=small lizard) and the many-toothed amphibia (Labyrinthodonts=maze-teethed) developed types which took to the land and became true lung-breathers. They were hard set to it to live. Cold-blooded creatures in an icy world, they struggled along in favored and sheltered valleys. But, as the Triassic erosion continued, as the land grew lower, as the climate grew warmer, the conditions of life came to favor two reptile groups (Blapsid=temporal arch and Synapsid=single temporal arch). As yet they did not grow to abnormal size. Of the Triassic vegetarian reptiles in America,

few were as large as a rhinoceros, none of the carnivorous reptiles of that epoch was larger than a tiger. The next period was to see the reptiles develop into the weirdest monsters that ever inhabited the Earth.

The two million years of erosion in the Triassic and the consequent leveling of the ground gave rise to the dank and steaming heat of the second Period (Jurassic—from the Jura Mountains in Switzerland). It was, in a measure, like the climate of the Coal-Forest, but not to the same extent, nor yet for as long a time. Still, much of North America was under a shallow sea again. The Pacific Ocean washed the shores of Eastern Nevada, and the southern states—west of the Appalachians—lay deep. It is to be remembered that, up to this stage, there had been no great elevation on the western side of the continent. The Sierras, the Rockies and the Alaskan ranges of mountains were not yet born.

In the swamps and over the low plains of Jurassic North America, crawled, waddled, lurched or ran that nightmare race of Giant Reptiles. In uncouth size, in monstrous extravagance of armor, and in fantastic variety of shapes, they ran to riot. In a general way, two great groups of these arose, the beast-footed (Theropods) with four or five toes on each foot, and the bird-footed (Ornithopods) with three toes on each foot.

They were of all sizes. Thus, among the beast-footed group there was a light rabbit-like reptile

not two feet high, there was a leaping reptile with hollow bones, there were sixteen-foot long Dinosaurs (terrible-lizards), and there was the twenty-ton Brontosaurus or the hundred-foot Gigantosaurus.

The bird-footed group did not attain to such enormous size, but they went even further in fantastic and bizarre shapes. From the light biped habit, they returned to quadrupedal types and took refuge behind armor. Stegosaurus was thirty feet long, and had a row of broad knife-like plates all along its back, three feet in height, while its tail was a battery of spear-points. Triceratops had an enormous skull with a turreted collar, and carried three horns besides.

As the million years of this Period rolled on, the strife between all these monsters grew more and more terrible. The large grew larger, the fierce grew fiercer, the armored became more and more cumbrously armored.

They developed in all sorts of ways. Some became aquatic and returned to the water, like the Ichthyosaurus (fish-lizard). Some grew so heavy (three times the weight of an elephant) that their enormous limbs could not support them and they reverted to the swamps, where they crawled, half-buoyed up by the water. Some took to leaping like enormous kangaroos.

Some, even, mounted into the air and became flying reptiles (Pterosaurus=wing-lizard). Indeed, it is North America, rather than China,

which can boast of the dragon, for, flying over the sea which hid the Kansas of that time, one of these flying dragons (Pteranodon=toothless winged lizard) fell, and his bones have been found in the Kansas chalk, showing that he had a wing-stretch of twenty-two feet, and jaws four feet long.

Yet, before the Jurassic closed, the future supplanters of these monsters were making their humble bow upon the stage. Some very primitive birds (with teeth) and some very early forerunners of mammals appeared. The links are clear between the reptile and the bird, and between the reptile and the mammal. For the former it is enough to mention birds with reptile teeth and birds' feathers, to point out that feathers are but a form of scales, and that most birds still have reptilian scales on their legs. An illustration of the link between reptiles and mammals is the still-existing Platypus, which lays a reptile egg and then suckles the young like a mammal, and is midway between the cold-blooded and warm-blooded type.

As the Jurassic Period approached its close, there came again that most significant of all things in the Earth's history—a slow uprising of the land. Again, as at the beginning of the Permian Catastrophe, the rich vegetation began to die away, again the conditions of life ceased to be favorable. The marsh-lands dried. The low plains hunched themselves higher. The seas rolled back to deeper beds. The second great trial of the world was near. While its climatic changes

were not to be as agonizingly severe, its destruction was to be as great.

Thus, as the third Period of the Secondary Era, came the Cretaceous Catastrophe, the Age of Chalk, so named since its fossil life is best deciphered in the chalk deposits of its first epoch. For the continent of North America it was of enormous importance, since it was then, during the earlier epochs, that the Sierras and the Rocky Mountains began to rise, never to sink again. Thus North America came to be built as it is now, with mountain ranges paralleling its eastern and western coasts, and two sloping plateaus between, falling to the valley of the Mississippi River.

When the Archæan Era had ended, a division of land and sea was made; when the Primary Era had ended, the outline of North America was made; when the Secondary Era ended, the general characters of the surface of North America were made. All later events in history have been influenced and determined by these main physiographic features—two oceans, two chains of mountains, two plateaus and a valley between.

CHAPTER II

LAND SCULPTURE BY THE ICE

Set apart from other continents by the Atlantic and Pacific Oceans, determined in its physiography by the uplift of the land during the Age of Chalk, North America began its independent history at the close of the Cretaceous Catastrophe.

In the Third or Tertiary Era, drastic changes were to occur. These were to alter many of the minor physical features of North America, to sculpture in detail the face of the continent, and to determine what character of country it should be when the Great Ice Age ushered in Man.

The appalling destruction of the life of the Primary Era which was caused by the land uplift of the Permian Catastrophe was, to some extent, duplicated in the destruction of the life of the Secondary Era by the Cretaceous Catastrophe.

The word "Cretaceous" was applied to the strata of rocks of this age, which include marls, limestones and chalk, because it was first studied in the chalk cliffs of England and France, facing the English Channel. The limestone and chalk deposits were made by the continual rain through the water of countless myriads of tiny dead sea crea-

tures. All sea-shells are made largely of lime which is held in suspension in the water.

In the Cretaceous, the destruction of life as a result of cold was less general than in the Permian, for the uplift was less general. The elevation characteristic of the Cretaceous was not of the continents, as wholes, but of mountain chains, here and there, in different parts of the world.

The climate, therefore, though it turned colder, did not pass into the icy horror of the Permian Catastrophe. The cold was selective, rather than annihilating. The seasons of summer and winter came to be more sharply marked, and the flowering plants flamed into beauty for the first time with bewildering suddenness.

Whence came they, these flowers? Truth to tell, their earliest history is not known. Probably the earliest types of flowering plants were cycad-like forms of the Middle Ages of the Earth. These plants looked like palms, uncoiled their leaves like ferns, and fruited like pine-trees. Probably they remained on such higher and cooler land as they could find during the Jurassic, ready to spread and flourish in the colder and drier time of the Cretaceous Catastrophe.

Yet it was not only the flowers of the field that this dry cold period gave to the world. The great gain, rather, was in forest life. Maples, oaks, beeches and elms appeared. The cedar and the magnolia grew side by side, the pine-tree and the palm. Perhaps more important than all—so far

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as life was concerned—grass spread over the fertile uplands and snuggled along the valleys. Plant life left its infancy behind and blossomed into a colorful and glorious youth.

To the animal world, however, the Cretaceous Catastrophe was truly a catastrophe, as smashing in its execution as had been the Permian.

The Giant Reptiles had ruled the air, the earth, the marsh and the sea. But their reign of tyranny was over. Cold, the arch-enemy of life, had them by the throat. It did not need the intolerable frigidity of the Permian. The chill of the Cretaceous was enough.

In the warm and moist Jurassic climate the Saurians had modified themselves so far, they had grown too big, too cumbersome, too fantastic to be able to adapt themselves to newer conditions. Chiefest of all, they were too stupid, for those huge Saurians were possessed of brains no larger than a man's fist. In one sense, it was the cold that killed them, in another, it was their swollen growth and their stupidity.

One of the larger of the vegetarians, the three-horned-beast (Triceratops), because his large skull held a little more brain than the rest, and because he was a dweller upon solid land, persisted as long as the late Cretaceous, and lived to be freed from the Tyrant-Reptile (Tyrannosaurus) and other of the carnivorous monsters which had made life hideous for him. Aside from Triceratops, all the giants had gone. No reptile levi-

athans wallowed in the marsh. The sea-serpents became extinct. The flying dragons passed and left no survivors. Only crocodiles, lizards, turtles and snakes passed that grim Cretaceous threshold of the Tertiary Era.

The day of mere bigness was gone. The day of quick adaptability was coming. Competition changed its character. The creature which would survive was one which could endure the cold of winter and the heat of summer, which could find nourishment under changing conditions. The world was speeding up. Blood must run faster. Nerves must be more a-tingle. By that test, the reptiles, without warm blood, unfurred and unfeathered, leaving their eggs to the mercy of the elements, fell short. Not one of those earth-shaking monsters, armored, it would seem, to resist all foes, lived long enough to lay his bones on the soil of the Tertiary Era.

Warm blood, warm coats and care for the young—these were the three requirements of the Tertiary Era. And where is there such warm blood, such warm coats and so great a care for the young as among the birds? They came with a rush in the early part of the Tertiary Era.

Whence came they? From the reptiles, as has been said. As far back as the early Jurassic—many millions of years earlier—just at the time that the Giant Reptiles were branching out into their diverse and monstrous forms, one branch turned birdwards. The Oldest-of-all-Birds (Arch-

æopteryx) left two of their skeletons in a Jurassic rock-structure. These creatures were a combination of reptile and bird. They had long lizard-like tails, reptile-like backbones, teeth in their jaws, and three complete clawed fingers on their front limbs. At the same time, they had feathers, the front limbs had turned almost to wings, the hind legs were like those of a perching bird, and even the long tails had a pair of feathers sticking out from each vertebra clear down to the very tip. It is not likely that these birds had four-chambered hearts. In the warm Jurassic period, their coats of feathers sufficed.

During the Age of Chalk, thirty different species of bird had developed, and possibly more. The typical bird of this period was the Fish-Bird (*Ichthyornis*) something like a sea-gull, a powerful swimmer, with slender legs and small feet; but its backbone was that of a reptile, the brain was small, and it had forty teeth in its jaws.

In the first Period (Eocene=dawn-recent-life) of the Tertiary, the various modern species of birds were well represented by their ancestors. Types as different as gulls, flamingoes, eagles and woodcocks have been found in Eocene rocks, and parrots, swallows and woodpeckers in the rocks of the next (Oligocene=little-recent-life) Period.

It was, however, with the Mammals that the Tertiary Era had most to do, and since the history of the continent of North America, first, and of the nation of the United States, later, was to de-



HOW THE GREAT ICE SHEET COVERED NORTH AMERICA.

It was the hand of ice which carved and sculptured North America into the shape and form that it possessed when the first Americans came to be.



Courtesy of The American Museum of Natural History.

THE UINTATHERIUM. A GRAZING ANIMAL.

A fossil mammal about the size of an elephant from the North American Eocene. This group, called the Terrible-Horned, was endowed with tusks, six horns, but a small and insignificant brain.



Courtesy of The American Museum of Natural History.

THE MESONYX. A HUNTER AND FLESH EATER.

As the struggle for life increased the Carnivores developed better brains, became more active and preyed upon the slower and clumsier Herbivores, who furnished their principal food supply.
Both of these paintings are restorations of geologic animal life by Charles R. Knight.

pend in great measure on the animal life of mountain and plain, it is worth while to sketch the queer beasts which disported themselves over the sites of modern cities and farms.

The difference between the rearing of reptiles and of birds and mammals may be repeated, as it is of the utmost importance. Among reptiles, the task of the mother ends with the laying of the egg. It is left for the earth to hatch it out. The bird aids the process further by hatching the eggs with the heat of her body and then feeds the young. The mammal attains a step still higher, developing the young within the body, and then feeding them at the breast.

There is a principle, here, of historical importance. The higher a nation becomes, the more helpless—by comparison—do its children grow, and the greater is the need of the State to take care of them. All other things being equal, the nation which most fully develops its children will take the lead of the world.

Between the reptile and the true mammal there were two great steps, that of the Monotremes (one-excretory-outlet), such as the duckbill and echidna; and that of the Marsupials (pouched), such as the opossum and kangaroo. The monotremes lay eggs, and then give milk to the young in a primitive fashion, the echidna being a little higher than the duckbill. The marsupial young are half-hatched when born, and the process is completed in an exterior pouch.

At this time, Australia was cut off from the continent of Antarctica and from Asia, so that the animals which had developed in Australia at the end of the Middle Ages of the Earth had an opportunity to develop without attacks from carnivorous enemies. Thus the primitive marsupial types—which are true mammals, yet rudimentary to all higher forms where the young are almost completely formed when born—developed into wombats as big as elephants and to kangaroos far larger than those of today.

The bones found in the lowest rocks of the Eocene Period, however, prove that at the beginning of the Tertiary Era, true, though primitive mammals, were in full possession of the scene. They were in two groups. There were the patriarchal herbivores (Condylarthra=knuckle-jointed) from whom all horses, oxen, deer, elephants and pigs were to come—for all these different kinds of animals had a common ancestor. The second group was that of the patriarchal carnivores (Creodonta=flesh-teeth) the ancestors of hyænas, lions and tigers, dogs and foxes. All the animals of these two groups had five toes on each foot and forty-four teeth.

As had happened so often in early times, some of these species sought safety by growing big. Two examples of this among the herbivores was noticeable. In early Eocene the Amblypods (stumpy-feet) developed, some (Coryphodon=crown-toothed) as large as an ox; while another

group, the Terrible-Horned (*Deinocerata*) became almost as big as an elephant and were endowed with tusks and six horns. These soon died out. Their brains were small in proportion to their bulk and the bigger-brained and more active Creodonts waged unceasing war on them, since the big creatures formed their principal food supply. The smaller forms escaped capture more easily, and flourished.

The struggle for life increased. The carnivores became swifter, stronger, and better-jawed. The herbivores, unable to fight back, sought a score of different methods of escape from the sabretooth cats, wolves and hyænas of that day.

In their frantic efforts for defense, some of the smaller groups burrowed underground, as did the ancestral rabbit; some took refuge in the trees, like the early squirrel (*sciuromorph*) and the monkey-like lemur; some plunged beneath the water and became aquatic like the primitive otter and the zeuglodont whale; some, even, like the horseshoe bat, escaped into the air. Among the larger group, the avenue of escape was by swiftness, and these divided into two great groups, the odd-toed (*perissodactyla*), of which the horse is a typical example, and the even-toed (*artiodactyla*), such as cattle and deer. One of the few of the larger mammals to adopt the system of armor was the rhinoceros, which originated in North America.

On the American continent, the development of

animal life was complicated and important. Its study has been made even more difficult by the fact that at various times of the continent's history, it was attached to Europe and to Asia, and at other times, separated. Thus, when the land link was made, American animals could emigrate to Europe and Asia, and America could receive European and Asiatic immigrants; when the land bridge was gone, each continent would develop new forms in its own way.

Thus in the early Eocene, the three continents were joined, but, by the Middle Eocene, divided. In the Oligocene Period Asia and America were closely connected, but there was no land bridge to Europe, and South America was shut off. In the third Period (Miocene=less-recent-life) the land bridge to Asia retreated further north, but the South American bridge was reestablished; though Europe was still divided from Greenland by a narrow strait. In the fourth Period (Pliocene=more-recent-life) both the Asiatic and South American land bridges were wide and solid, and possibly, for a short period, the land bridge to Europe was renewed. At the beginning of the first Period of the Quaternary, the Pleistocene (most-recent-life), better known as the Ice Age, all three continents were joined at the north, but the bridge was not of land, but of ice. In the second epoch of the Quaternary, the Holocene (entirely-recent-life), land and sea masses became as

they are now, for this is the geological name for the present time.

To trace the ancestry of all the various types of animals would lead far afield, but there are certain groups which are of special interest as being exclusively American. The Patriarch-Cat (*Patriofelis*), though the ancestor of the cat family, combined the features of the cat and the seal. The Wolf-Fox was an undifferentiated ancestor of these two types. Giant pigs, four feet high at the shoulder, roamed all over the United States. In the western plains developed the Giraffe-Camel, ancestor of two animals which are very different from each other now. At the end of the Tertiary Era, Montana was well supplied with a camel population of its own.

The two animal types which have been most fully traced out are the elephant and the horse, the latter mainly from American specimens. The horse evolved from *Eohippus* (dawn-horse), a small Eocene animal, no bigger than a fox, and possessed of five toes. In the second Period, *Mesohippus* (middle-horse) was twice as large, and had but three toes, the other two being rudimentary. In the third Period, *Parahippus* (like-horse) had but three toes and had lost the rudimentary laterals. In the fourth Period, *Pliohippus* (more-horse) was almost a horse, sporting a hoof, but the two side toes were there though they did not touch the ground. The true horse, *Equus*, ap-

peared in America before the close of the Tertiary Era.

The elephant, like the horse, has been traced through all the four Periods, beginning from an animal like a tapir, not bigger than a pony, but with a snout and small tusk-like teeth. By the middle of the Tertiary, tusks and chin were about the same length, and the long snout was growing to the size of a short trunk. By the end of the Era, the direct ancestors of the mammoth and the mastodon had developed and those giants of the Ice Age had appeared on the scene.

Before leaving this picture of the direct ancestors of the animals of today, the Primates cannot be left out. This included four groups, the lemurs, the monkeys, the apes, and Man. Whatever relationship the physical structure of these four types had to the early mammals, and even to a common forerunner, the silly notion that any of these was developed from the other should be set aside. Never did a single scientist advance such an idea, which was due to a popular misunderstanding. Man never came from monkey, and no scientist ever said he did.

The lemurs first appear in the Eocene; the monkeys appear in the second or Oligocene Period; the apes come on the scene in the third or Miocene, and then there comes a gap. There is not sufficient evidence to justify the statement that Man first appeared in the fourth, or Pliocene Period, though many anthropologists have pre-

sented evidence which seems to point that way. Man, as Man, as the word is generally understood, cannot be said to have been a factor of population until the time of the Ice Age, or the Pleistocene.

North America, then, was a vast theater, whereon, for over five million years, the mammals developed from their primitive ancestral form to the types that exist upon the world today. Some of the earlier types carried over to and through the Ice Age, and only became extinct during the Age of Man. Early examples of these were the cave-bear, the mastodon and the mammoth; later examples are the aurochs and the buffalo, the former only recently extinct, the latter preserved only in park specimens.

This Tertiary Era, though it seems long in comparison with the Age of Man, was less than half the length of the Secondary, less than one-seventh the length of the Primary Era, and certainly less than one-tenth of the length of the Archæan. It may be well, at this point, to recapitulate the geological divisions of time: 1. The Archæan Era, divided into four Periods, Laurentian, Keewatin, Huronian and Keeweenawan; 2. The Primary Era, divided into five Periods, Cambrian, Ordovician, Silurian, Devonian and Permian; 3. The Secondary Era, divided into three Periods, Triassic, Jurassic and Cretaceous; 4. The Tertiary Era, divided into four Periods, Eocene, Oligocene, Miocene

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and Pliocene; 5. The Quaternary Era, divided into two Periods, Pleistocene and Recent.

The Tertiary Era, like those which had preceded it, was ended by a Catastrophe, the Pleistocene Period, or Ice Age, which ushered in the Quaternary Era.

This Ice Age, or Glacial Period, was a gradual process which had an enormous effect on the physical features of North America, and an even more striking effect upon human life on this continent. The character of the pre-Columbian civilizations depended largely on the conditions produced by the Ice Age.

For the fourth time in the history of the Earth, a cold climate followed upon a warm one. Like the Cretaceous Catastrophe it was local, rather than general, and, like the former period of destruction, it was especially marked in North America. The changes have been very carefully worked out by American geologists, and they are as much a part of American history as the voyages of Columbus or the arrival of the Mayflower.

In the eastern part of the continent, the rise varied from 500 to 1,000 feet. In the Mississippi basin, the rise was probably but a few hundred feet, but yet enough to remove all swamps, bayous and low-lying land. In Southern California, the uplift was not less than 1,500 feet; in Northern California, about 2,000 feet; while parts of the Sierras were thrust into the air from 3,000 to 6,000 feet higher than their peaks are now. Ore-

gon and Washington were at least 1,500 feet higher than at present. British Columbia rose to a further height of 3,000 feet. To the south, the West Indies were a high mountainous land at the time of the greatest elevation, and the Caribbean Sea and the Gulf of Mexico were either lakes or deep bays.

There was a land bridge to Europe and a land bridge between North and South America. Moreover, the line of islands which stretches from the Malay Peninsula, southward and eastward through Melanesia, Micronesia and Polynesia to Easter Island, and which approaches the coast of South America, was more closely linked. The islands were of larger size, and many smaller islands bridged the gaps between. These land bridges are of the utmost importance when considering the problem of the origin of Man in North America, and the mysteries of pre-Columbian civilizations.

It was the hand of the ice which carved and sculptured the continent of North America into the shape and form that it possessed when the first Americans came to be. The physiographic changes of this epoch dug the river valleys and made the harbors, so that, for example, New York lies where it does because of a glacier that made the Hudson Valley and scooped out New York Harbor.

It was the ice which left vast stretches of stony ground where agriculture does not thrive, which

deposited the fertile débris of the drift and which began erosive forces that have deposited fat soil in the Middle West. It was the Ice Age which set apart the grassy plains of the West for the stock industry, which rendered accessible the mineral deposits of the Far West, and which gave to America the rich variety of animals and plants which it possesses. The history of any single State in the Union, whether it be Vermont, Louisiana or Colorado, is unintelligible unless this great geological background is remembered.

In the earlier period of the Ice Age, before the great sheets of ice were formed, the uplift of the land had two marked effects. In the first place, it increased the speed and flow of rains and rivers from the heights, thus quickening erosion; in the second place, it stunted vegetation, attacked the feebleness of animal life and weeded out those which were unfit. These processes increased in vehemence until the intense cold of the climate gave birth to the ice-sheets.

But there are mysteries and puzzles about the Ice Age. The romance of North America lies not a little in the hidden causes of its development. The scientific spirit is, often, closely akin to the detective spirit, when every effort of human wit is set to solve a mystery. A great question mark hovers over the American Ice Age.

No student of that epoch questions the two facts of the uplift of the land, nor yet the frigidity of the climate. There is abundant proof of both. Yet

many doubt whether these two causes are enough to explain the formation of those enormous masses of ice which brought the North Polar Regions as far south as Kentucky and the South Polar Regions as far north as Brazil. A further complication lies in the fact that there were at least four advances and retreats of the ice, explanations of which are far from satisfactory. This page of American history is blurred.

One of the famous efforts to solve this mystery, which spreads its frozen fingers over the first adventures of the first Americans, is known as Croll's theory. It is held by a fair proportion of the astronomers and geologists of the world. Reduced to its simplest terms, this theory points out that the orbit of the Earth is not circular but varyingly elliptical, and that, at the time of the Ice Age, the winters were longer than now, giving opportunity for the accumulation of snow-fields, which were compressed into ice. This theory is not without difficulties, mainly of a complicated mathematical and astronomical kind.

There are three other main astronomical theories: one of which is based on the obliquity of the ecliptic, the second of which asserts the passage of the Earth through a cold region of Space, and the third of which suggests a variation in the amount of heat emitted by the Sun; all of these lack sufficient proof.

In addition to the uplift of the land theory, there are two other main geological suggestions.

One of these is the wandering Pole theory, which suggests the cold to be due to a change of position in the Earth's axis; but this theory runs counter to modern knowledge of the rigidity of the Earth. The other theory ascribed the Ice Age to a change in the constitution of the gases of the air; but this runs up against a snag in the fact that water-vapor is determined by the amount of heat poured out by the Sun, which is moderately constant.

This chapter of American history, then, must await further knowledge before a flat statement can be made. 'It is enough to say that there was an uplift of the land, there was a change in air currents, that these changes occurred, possibly, at the same time as astronomical variations, but the part which each factor played in the result is not as yet assigned.

How much of North America was under ice? All of Canada and about one-fourth of the United States.

How is this known? Very simply. As the ice-sheet advanced, it ground away the mountain tops and gouged out the valleys. By one of the curious features of glacier movement, the larger pieces thus ground away—pebbles, stones, boulders and large rocks—were forced to the front of the glacier. When the ice melted, these boulders sank to the ground, where they lay. The melting water was not strong enough to move them. There is, therefore, to this day, all across the continent of America, a line of such drift, stones and boul-

ders, which marks the edges of the various ice-sheets. This is known as the terminal moraine. It is so plain, that, for hundreds of miles of its length, a child can follow it.

Beginning at the eastern coast, it is evident that off the coast of Maine the ice extended far into the sea, and the terminal moraine—or line of outermost marking—first comes out on United States land in Massachusetts. Cape Cod, Nantucket, Martha's Vineyard and Block Island are but lumps left by this moraine.

The line runs straight through Long Island, and half of Brooklyn is built on land once covered by the ice, the other half by land washed down from the ice as it melted. All Manhattan Island was under the ice-sheet. The terminal moraine shows very clearly on Staten Island and southward into New Jersey for a little distance, turning westward to pass through that State a little north of Trenton. It passes through Pennsylvania a little north of Harrisburg, when it makes a bend to the north to include Pittsburg and turns southward again. After crossing the boundary into Ohio it takes a big southward sweep to the borders of Kentucky, running through Cincinnati.

Near Louisville, the line breaks sharply northward, almost as far as Indianapolis, and thence sweeps in a great bend southwards to embrace almost the whole of Illinois, its northward sweep bringing it a little outside St. Louis. Across Mis-

souri, the line of the Mississippi River approximates the glacial limit. The terminal moraine enters Kansas a little south of Kansas City, thence to Topeka, where it swerves northward about a hundred miles west of Omaha, entering South Dakota at the junction of the Niobrara and Missouri Rivers. From there it follows the line of the Missouri to a point a little west of Bismarck, and thence runs in a waving westerly line to Puget Sound.

The line of the outermost terminal moraine shows that, at one time, the ice-sheet enshrouded all the New England states, New York, Pennsylvania, Ohio, one-half of Indiana, Michigan, Wisconsin (which, however, had a bare spot or driftless area), Minnesota, Iowa and Illinois, half of Missouri, the corner of Kansas, half of South Dakota, the greater part of North Dakota and of Montana, and parts of Idaho and Washington. There were, in addition, large local glaciers along the Pacific Coast ranges, and probably, small ones at some points of the Appalachians.

How deep was this ice-sheet, how thick through? Estimates cannot be exact, as it varied in places. Thus, even supposing that the Green Mountains in Vermont were no higher then than they are now, the ice-sheet passed over their 4,000 feet with scarcely a ripple. It would certainly be a moderate estimate to say that the thickness of the ice-sheet over the northern part of the United States

was not less than 2,000 feet, and, in places, twice that thickness.

The sculpturing effects of this moving ice-field were most important. As all the eastern mountains were covered with ice, the grinding of this terrific mass wore away the tops of the mountains. For this reason, none of the northeastern mountains of the United States have sharp peaks like those of the Rockies, Andes, or Alps.

Where the ice moved down a river valley, it cut the valley deeper, especially where the rock was soft. The Hudson River is an example of this, for, at New York, it has a width and a volume of water (tidal) utterly out of comparison to the amount of flow demanded by its small basin. The St. Lawrence River Valley also was deepened by the sculpturing action of the Labradorean ice-sheet.

The Great Lakes, around which so much important commerce centers today, are the products of the Ice Age. There is no reason to suppose that they existed, as depressions, during the Tertiary Era, though, probably, some river system may have been thereabout. Through this old river valley ground the glaciers, deepening and enlarging it. Any halt in the movement of the ice would set up cataclysmic grinding and scoring movements. Moreover, as the ice melted, the irregular dropping of the drift formed hill-like dams, changing or stopping the flow of the water, and thus deepened the lake basins. The melting ice formed an

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immense body of water, Lake Agassiz, several times as large as the total area of the Great Lakes today. Of this vast basin, Lake Winnipeg is the small remainder. But there is no doubt that Lake Agassiz was connected with a lower lake, a single sheet of water, which, in recent times, has dwindled to the Great Lakes as they are today. Duluth, Milwaukee, Chicago, Detroit, Toledo, Cleveland, Buffalo, Toronto, Montreal and Quebec owe all their present commercial importance to the Ice Age a hundred thousand years ago.

As the Ice Age had a flow and ebb of four stages, with alternate periods of warmth and cold, the life of that epoch showed wide variations. At one time, only Arctic animals lived at the borders of the drift; at another, when the ice had partly receded, tropical forms spread far to the north. By the character of animal remains, in the several deposits, the changes of climate can be followed.

The first of these four epochs was marked by the presence of vast herds of wild horses and primitive camels. The second epoch saw the decline of the camels and of the ancestors of the buffalo. The third, a cold dry epoch, witnessed the arrival of Arctic animals, such as the musk ox and the northern mastodon, the northern mammoth appearing as far south as Maryland, and reindeer ranging over the Middle States. In the fourth epoch, wild horses, camels and saber-tooth tigers

disappeared, musk ox and reindeer grew rare, and the type animal was the wapiti.

As yet, no human remains have been found in America which are indubitably older than the Ice Age. This is not to say that they will never be found.

Human remains as old as the Ice Age have been found, however, in other parts of the world, and, as North America was connected by land bridges with other parts of the world at stages during this epoch, these men, as the possible ancestors of the First Americans, are of vital interest.

One cannot put the question as to when Man first came to America without considering when Man first appeared on the Earth; nor can one rightly undertake to trace whence came the first immigrants to America without some understanding of where these immigrants originally lived.

At the risk (for the sake of clearness) of seeming a little too definite, it may be said that there are six periods involved, and six races of men. As the weapons and tools of all these races of men were of stone, these six periods are commonly called the Age of Stone.

In the first period of the Age of Stone (Pre-Glacial) there may have lived a race, of whom no certain human remains have as yet been found, a race which used flaked flints in their natural state, but did not make weapons themselves. Such stones are known as eoliths (dawn-stone-tools), and both the stones themselves and the possible

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race which used them are matters of scientific controversy.

In the second period (First Interglacial) is placed the Trinil Race. The human remains of this race are slight. They were found on the banks of the Trinil River in Java. Some anthropologists do not regard them as surely human. Such culture as this race possessed was probably eolithic.

In the third period (Second Interglacial) is placed the Heidelberg Race. The human remains of this race are slight, but definite. They were found at Heidelberg in Germany. They are surely human. Such culture as this race possessed was paleolithic (old-stone-tools), meaning that the stone tools and weapons were not only found, but made.

In the fourth period (Third Interglacial) came the Neanderthal Man. The human remains are plentiful. They were first found at Neanderthal in Germany, but have since been found at points as far apart as Belgium and Gibraltar. Tools and weapons are widely found in deposits of this time. Several stages of culture have been discovered, and by the end of this period, the men were clever artisans.

In the fifth period (Fourth Interglacial) came many races, of which the Cro-Magnon Man took the lead. The remains were first found near Cro-Magnon on the Dordogne River, in France. Human remains are plentiful, several other races

appear, and, not only was the actual culture high, but a marvelous art development took place. Deposits of that time show paintings, carvings, sculptures and engravings of a high order of artistic merit. Four new races came into Europe at the close of this time, and conquered this race of artists.

In the sixth period (Post-Glacial) many of the ancestral races of Europe appeared. Culture in stone grew high. From chipped stone, Man passed to polished stone, and to the use of weapons and implements in other substances. This is the Neolithic period and led into the Age of Bronze and thence into modern times.

Did any of these races come to America? Did Man in America antedate those types which have been found in Java and in Europe? No one, as yet, can say. Any day, the pick of a miner or the steam shovel of an excavating dredge may uncover some evidence to give America the priority; or any day may give the glorious discovery to some other continent.

Herein, to a large measure, lies the Romance of the Early History of America; herein is the spell of Science. The lure of gold is great, yet the gold-seeker has nothing but his pocket in view; the lure of discovery is greater, for the result is infinitely more, and not for a selfish end. The world still waits to know—Who was the First American? Did any human eye behold the ice-sheets of North America?

CHAPTER III

CURRENTS OF SEA AND SKY

THE continent of North America is not separated from the continents of Europe and of Asia by water; rather, it is joined to them by water. The sea is but a water-bridge between lands. What was once a barrier has become a link, the dividing line has become a joining line, and American History is cleft in two by that great historical change.

Land and water, since the beginning of historic times, are divided in such a proportion that the area of the ocean (more than 143,000,000 square miles) is nearly three times the area of the land. But the ocean basins are only about twice as great as the area of the continental platforms. To put the matter another way, there is too much water to go into the ocean basins and it spills out on the sides, flooding, for some distance, the continental shelf. This fact has had, and still has, an enormous influence on history. At one and the same time, it complicates navigation, and it produces shallow bays which may become protected harbors. About ten thousand square miles of land, actually belonging to the continents and ly-

ing around the edges of them, are thus covered by shallow water.

The continental shelf is generally regarded as consisting of the shelf of land around the continents, over which the ocean has flowed, and which is at no place deeper under water than a thousand fathoms (6,000 feet). A very large proportion of it is much shallower than that. In fact, 7 per cent of the whole ocean area is shallower than the hundred-fathom line (600 feet), and 9 per cent more lies between the hundred- and the thousand-fathom line. The covering of this continental shelf by the sea is so recent that the beds of rivers, which used to flow to the edge of the shelf, can be traced on the sea-bottom. At the edge of the continental shelf, as a rule, the pitch of the ocean basin is abrupt.

The continental shelf of North America is of especial interest. Rarely does it extend for much more than a hundred miles to sea. From Florida to Cape Cod it parallels the coast, only creeping in nearer close to Cape Hatteras. Greenland is attached to North America by the continental shelf, and so is Iceland. Until recently, Iceland also was attached to Europe, for the continental shelf of that continent projects boldly beyond Norway and the British Isles. The Baltic Sea, the North Sea and the British Channel are but old river valleys in a solid continent, yet the sea, both north and south of the Iceland bridge, is deep.

All the West Indies and the Caribbean region

belong to the American continent, that is, they are all on the same shelf, and the Gulf of Mexico and the Caribbean Sea appear as deep lakes, both having an area that descends below the 2,000-fathom mark.

South America has a narrow continental shelf, except in the far south, where, for hundreds of miles west of Cape Horn and east of the Falkland Islands, the waters are shallow. The continental shelf of Antarctica is separated from South America by a narrow, but deep strait.

The western shores, both of South America and North America, have very little continental shelf. Near San Francisco, for example, the plunge-off into the 2,000-fathom depth is precipitous. The continental shelf runs along the Aleutian Islands to Japan and thence to the mainland of Asia, and it also goes from the whole western shore of Alaska to Asia, connecting all along the Siberian and Chinese coast. Behring Sea, however, appears as a lake with a 2,000-fathom deep.

The question of "the lost Atlantis" is bound to be brought up whenever one thinks of the depth or shallowness of the Atlantic Ocean, rolling between Europe and America. It might be going a little far to say that there never was such a continental island within historic times, but it is certainly true that soundings do not show it. From Greenland, all along the American continental shelf, clear to Antarctica, there is a 2,000-fathom depth. From Ireland, clear along Portugal

and the whole western coast of Africa, there is a similar depth. Between the two lies a narrow ridge, known as the Dolphin Ridge, extending through both oceans, but this is nowhere less than 1,000 fathoms deep.

The elevation of the sea-bottom, therefore, would have had to be more than 6,000 feet at the close of the Ice Age to produce the appearance of Dolphin Ridge as a long, knife-like island, and there is no proof of such an elevation. Yet it is not to be denied that there is as much reason to expect the existence of the island of Atlantis in historic times as there is to claim a complete land bridge from Asia to South America. Both are legendary, and possess, therefore, both the possibility and the uncertainty of legend.

Remembering the new historical attitude that the oceans on either side of the North American continent are junctions to other lands, rather than separations from them, it is highly important to find out if the currents in these oceans are calculated to bring early and primitive navigators to American shores or to set them away. Thus, if there were a steady current setting in from Europe, clear across the Atlantic Ocean to America, one would expect to find European articles—and even European castaways—thrown up on American coasts. If Asiatic currents should set eastward, the same might be expected. What are the facts of the case?

First of all, the general currents of the ocean

play their part. In the Atlantic Ocean, the basic currents are the two North and South Equatorial Currents, drifting in a southwesterly direction. The speed varies with the time of year, but, in general, the Northern Equatorial Current averages two-thirds of a mile per hour, and the Southern Equatorial Current over a mile per hour. Between these two there drifts back, even more slowly, the Equatorial Counter-Current, directed eastward and making barely a quarter of a mile per hour.

The Southern Equatorial Current is especially worth following. Arriving at Cape St. Roque, the eastern point of South America, the current splits into two, one branch turning southward to become the Brazil Stream, while the other turns northward and joins the North Equatorial Current, to form the Guiana Current. These two currents uniting, and partly checked by the broken line of the Windward Islands of the West Indies, sweep through the channels between the islands at high speed, often several miles per hour. Many a man, caught alone in a boat, has been swept into the Caribbean Sea by this current, and there has died from famine and thirst.

The Caribbean Sea itself is in the grip of this Guiana current, a fact which played an enormous part in the later voyages of Columbus and which led Spain to make her first mainland settlements on the coast of South America instead of North America. The westward movement of the Guiana

Current, however, is checked by the body of calm, hot water which forms the western bay of the Gulf of Mexico, and, backed up by this, it wheels northward and eastward, changing its name from the Guiana Current into the Gulf Stream.

Cramped by the narrow confines between Florida and Cuba, the Gulf Stream takes on greater speed as well as greater warmth, and whirls northward and eastward. The surprising heat of the Gulf Stream (over 80° Fahr. near Florida) is easily understood when it is remembered that it is compounded of the North and South Equatorial Currents, which have been flowing at a mile an hour over a 3,000-mile course under a tropical sun, and that it sucks into itself a great deal of the superheated water of the Caribbean Sea and the Gulf of Mexico, which (except for small central portions) are shallow and lie on the continental shelf.

Beyond Cuba, the Gulf Stream passes into the Pirates' Lair, among the coral keys beloved of the buccaneers. At the Florida Straits it flows two and sometimes over three miles per hour. At the Straits, the Gulf Stream is but 30 miles wide, but it broadens to 150 miles opposite Charleston.

Five hundred miles farther to the northeast, the Gulf Stream, now running slower, divides into numerous branches. Of these the three most important are the English Channel Current, which makes Devonshire "the garden of England"; the

Irish Current, which keeps away frost and brings so much warm rain to Ireland that it is known as "the Emerald Isle"; and the Norway Current, which runs between the Hebrides and Iceland, keeps the fjords of Norway open, finally turns the North Cape and gives to the Murman Coast an ice-free harbor all the year round, while the White Sea ports, five hundred miles farther south, are ice-bound eight months in the year.

These climatic effects of the Gulf Stream are all the more amazing when it is remembered that Ireland is on the same latitude as Labrador, and that the Murman Coast is farther north than that distant ice-bound cape of the Arctic region whence Peary made his dash for the Pole.

Of equal importance—perhaps of more importance to the history of North America—is the cold East Greenland Current, coming down from the frozen north. One arm of this turns into Davis Straits and flows between West Greenland and Baffin Land; the other joins a southward flowing current out of Hudson Bay, through Hudson Straits, and becomes the Labrador Current. This flows past the Newfoundland Banks and reaches the edge of the Gulf Stream, where it disperses into two ways.

Some of the Labrador Current, undoubtedly, sinks below the warmer waters of the Gulf Stream, since cold water is heavier than hot. A part of the stream, however, passes westward and south-westward into the St. Lawrence Gulf and the

Cabot Straits and bathes the eastern coast of the United States as far as Cape Cod, where it is known as the Cabot Current. Reduced both in speed and in frigidity, it forms the "cold wall" of water which lies between the coast of the United States and the Gulf Stream. This cold current gives to Boston and New York their cold and snowy winters, as contrasted with the December rose-gardens of the Riviera and the summer-like Christmases of Naples, respectively on the same latitudes as Boston and New York.

Historically, these ocean currents were of tremendous importance to America. The South Equatorial Current led the Portuguese to the coast of Brazil. The Irminger-East Greenland Current led the Norsemen from Iceland to Greenland and thence to Newfoundland. The Labrador Current led the later Norsemen to Vineland and Hôp (probably Maine and Massachusetts).

The currents of the Pacific Ocean are considerably less complicated, for that ocean is wider and deeper than the Atlantic. As will be seen, one of these currents is exceedingly important, and has influenced the history of America as much as the Atlantic currents have done.

The North and South Equatorial Currents flow westward in the Pacific Ocean, as they do in the Atlantic, and there is also a Counter-Equatorial Current flowing eastward between. The general speed of all these is a little lower than that of the similar currents in the Atlantic. The South

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Equatorial Current turns off Malaysia, flows southward past Australia, and sweeps northward near South America. A cold Antarctic stream, known as the Peru Current, takes the same place on the southwestern part of the South American coast that the Labrador Current does on the northeastern part of the North American coast. Yet—and this may have been a vital point in early immigration—while the Peru Current acts as a cold barrier along the Chilean coast, it dies out as it comes to Peru and Ecuador, the Return South Equatorial Current laving those shores.

In the North Pacific, the return of the North Equatorial Current after it has struck the coast of China and been thence diverted northeastward to Japan and eastward from Japan, is even more striking. For the Return North Equatorial Current flows at the rate of almost a mile an hour straight across the Pacific Ocean from Japan to British Columbia, turning southward and northward when it strikes the North American coast and hugging the shore.

In the absence of exact and positive knowledge as to whence came the peoples who developed the civilizations of South and Central America, and the civilizations of the North American Indians, it is significant that one great ocean current flows from Java and Polynesia to Peru, while another flows from China and Japan to the Pacific Coast States and Western Canada. As will be shown in a later chapter, the earliest monuments found

in Ecuador, Peru and Bolivia bear certain resemblances to those of Java and Polynesia, and the North American Indian is of the same Mongoloid type from which came the Chinese and the Japanese.

Winds, too, played a most important part in the early history of this continent. The earliest European arrivals of whom there is any definite and unimpeachable record, the Norsemen and the Spaniards, came on sailing vessels; the earliest Pacific immigration legend suggests boats propelled by paddles and sails. The direction of prevailing winds might well be a deciding factor in the early settlement of the continent.

Winds do not blow at random. On the contrary, by far the larger amount of wind movement is regular, as regular as the current in an ocean or the flowing of a river.

Since the air in tropical regions is more heated than in polar regions, it rises. The colder air from the polar regions flows in to take its place. Thus, in the northern hemisphere, there is a northward-flowing warm wind in the upper air and a southward-flowing cold wind in the lower air. Permanent areas of high barometric pressure and low barometric pressure also change wind currents. So do the relations of sea and land.

Owing to the rotation of the earth, the winds blowing toward the equator in the lower air become easterly (northeasterly in the northern hemisphere and southeasterly in the southern hem-

isphere), and these are the trade-winds, blowing toward the southwest and the northwest. Between them lie the "doldrums" or zone of equatorial calms. The "roaring forties" or the horse latitudes are the zones of stormy westerly winds (blowing towards the east), which, while prevailing, do not blow with the regularity of the trades.

As these groups of winds are found both in the Atlantic and the Pacific Oceans, their relation to history is vital. The first point which strikes the attention is that the southeastern coast of the United States is on the edge between the northeast trades and the roaring westerlies. There is no prevailing wind to waft a would-be immigrant ship to New York; such a craft must battle its way from Europe across the ocean in the teeth of the roaring westerlies. The gentle and unceasing trade-winds, however, lead directly to the West Indies and the northern coast of South America. It was before such a wind that the sails of Columbus's ships were spread and upon those coasts that he landed.

The question of winds must be considered when reading the legends of the earlier Atlantic discoverers of America. If the legend suggests a landing far south, near Florida or the Carolinas, the probability of its truth is far greater than if the story speaks of New Jersey or New York, for, in the former case, the edge of the trade-winds might have helped these legendary navigators; in the latter case the prevailing westerlies would

have impeded clumsy ships, able to tack only with great difficulty.

The Pacific Coast presents exactly the opposite condition. In this case, the kind and gentle trade winds blow away from the continent, and the roaring westerlies drive for it. This is also true of Europe and Africa. There is, however, one physiographic factor which creates a very different condition on the western shore of the continent of America from that of the western shores of the continents of Europe and Africa. This is the long, high mountain chain of the Rockies and the Andes. The lofty Cordilleran barrier has a great effect on the westerly winds.

In the North Pacific, when the westerlies strike the high ridge of the Rockies, they strike it at an obtuse angle and are deflected mainly to the north. As Alaska bends out to the westward, the winds seek or force a passage through the opposing mountain ranges and hurtle through the high passes of British Columbia. This has given rise to the saying that "all American weather is made at Medicine Hat," the latter being the name of a small town not far from the base of the Canadian Rockies.

In the South Pacific, owing to the fact that the end of the continent of South America is at exact right angles to the slope of the winds, the westerlies break into two parts. The larger or southern part, backed up by the Andes, whirls in vengeful fury around the sharp point of Cape

Horn, which thus gathers into a bunch, as it were, all the westerly winds that hit on the southern Chilean coast. It is small wonder that Cape Horn was dreaded of sailors, and it is admittedly the stormiest section of the seas. The smaller or northern part of these South Pacific westerlies, however, curls round upon itself and starts northward. There the westerly projecting bulge of Peru and Ecuador turns it again, and it joins the southeast trades.

Again, supposing some shiploads of immigrants, some daring navigators, or some drifting canoes should be afloat on the Pacific, there would be little chance that the wind would blow them ashore anywhere between Oregon and Ecuador, but there might be a strong chance of their finding land, or being wrecked, as the case might be, in southern Peru or Chile, or else in Washington or British Columbia.

Winds have done more than merely act as possible pilots for early sea-goers. They have formed and still do form an important factor both in ancient and modern American history. Climate—which is a complex of latitude, land elevation and currents of air and sea—determines not only the character of a civilization, but forces a certain type of life on peoples. It decides whether they shall thrive or starve, live or die. An Eskimo migrating to a tropical climate cannot survive; a Congo Negro, set to herd reindeer in Labrador, will live but a few months at most.



THE PATHS OF THE OCEAN TO AND FROM THE WESTERN HEMISPHERE.

Historically these ocean currents were of tremendous importance in the early period of American history. While we have no exact and positive knowledge of the first migrations to or from America, as will be shown, these great sweeps of ocean currents played their part in directing the course of the earliest navigators, both **savage** and **civilized**.



THE PREVAILING WINDS OF THE WESTERN HEMISPHERE.

Winds do not blow at random; by far the larger amount of wind movement is regular, as regular as the current in the ocean or the flowing of a river. The gentle and unceasing trade-winds were a deciding factor in shaping the course of the early navigators toward the American continent.

Climate sets the bounds to commerce and industry. Climate decides what crops shall be grown, and where. Climate requires man to breed reindeer in the north, cattle in the temperate climates, and camels in tropical deserts. Climate produces luxuriant forests or sage-brush plains. Nay, even after alien peoples are established in the land, climate will change their characters. One need go no further than to compare the indolent acceptance of slavery by many dwellers in the enervating tidewater lands of the Southern States, with the rugged and aggressive independence which the stern winters of New England brought forth. Yet both groups of settlers were from a common racial stock.

When Man first came on the Earth, there is reason to suppose that much of the world was glaciated. The climatic range in which Man could exist, therefore, was only in the tropical and subtropical zones. As the ice retreated, Man pushed farther north. Energy is the result of strife. Northern nations are more energetic than southern peoples. A civilization born in a warm country will take on an entirely different character from that of a cold country; the same people, even, if divided by zones of great climatic changes, will become more and more unlike. The populations of New England and New Mexico can never resemble one another. The sunshine of the United States is a more potent historical factor than the Constitution of the United States.

Rainfall is a decisive factor in agriculture. Below 15 inches of rainfall per year, crops are not likely to succeed; with over 35 inches per year, crops are drowned out. The United States is usually spoken of as an agricultural country, yet less than one-seventh of its area is available for agriculture, largely because of unsuitable conditions either of climate or of soil. Even in the sections used for farming, climate produces three widely distinct belts in the United States: the wheat belt, to the north; the corn belt, through the center, and the cotton belt, to the south.

The importance of climate to North America is, however, even greater than these commercial aspects. North America lies in the Temperate Zone, and, during the historic period, the Temperate Zone has been the one in which the dominant white races enjoy good health.

One of the most notable of all features in the migration of peoples has been that any marked change of climate produces ill effects on the immigrants. Europeans who go to the tropics lose their mental energy, become lazy, grow self-indulgent and easily take to stimulants to keep up their lagging tone. From the point of view of health, the result is even worse. The temperature of the body rises to above normal, resistance to disease drops, and white settlers in the tropics die young. Children born there have even less resistance. In Mexico, the mixed white race survives, not because of its Spanish stock, but because

20 per cent of the population is full-blood Indian, 60 per cent more than half-Indian, and of the remaining 20 per cent only a very small proportion are of pure Spanish blood. Also, the greater part of the population inhabits the cool highlands. The low-lying swamps and bayou-lands of the Mississippi Valley are not desirable for white settlers. Low fevers of several varieties are common, malaria is everywhere, and the effect of long hours of sunshine on a flat plain combined with a steady humidity weaken the power of the whites. One of the principal reasons why the Spaniards did not thoroughly colonize the south-east, south and southwest parts of the United States, through which their exploring expeditions had passed, was because these sections are not fitted for white labor.

Climate, thus, is a power of the most mighty force over the destinies of men. In American history it has enabled the development of a republican system of government, which could not have taken place in a tropical zone, where whites could only have subsisted as a ruling imperial class, employing tropical native labor.

As will appear later, much of the acrimony of the Civil War was due to the fact that men and women of the North and South had been born and brought up under different climatic conditions. If it be asserted that their differences lay in different social and religious standards, the point still remains that it was climate which played a

large part in making and intensifying those social and religious standards.

History is never finished. Each day writes its page upon the record. Climate, in similar wise, writes its new page daily. The effect of the latter upon the former, then, is never-ceasing. It is a matter which is of the utmost value today. Immigrants from the north of Norway and from Spain were held, at one time, to be poor immigrants. This was for the reason that, while they were able to work vigorously, and did so, both were given to long periods of holiday. The reason ascribed was that the long winters of Norway and the long droughts of Spain had produced in both races a rhythmic loafing habit. It was found, however, that after some years of life in the Temperate Zone of the northern states this irregularity of working habit disappeared.

Owing to the long, arduous winter of northern Central Europe, the same irregular condition was found with Slav workmen, and their holiday habits were a great tax on the patience of employers. But it was found with them, also, that the effect of life in the Temperate Zone, with its not too severe winter and its not too hot summer, afforded the climatic variation which best suits the white race, and the earning power of Slav laborers increased.

As there is some scientific reason to suppose that, slowly, the Earth is returning to a hotter period (witness the retreat of the ice at the North

and South Poles, permitting their final discovery), the climatic problem of the Southern States is one which is becoming more and more complex. The existence of the large Negro population, which has been considered a menace to the United States, might, in the event of the growing torridity of the South, become of inestimable value.

North of the United States, the slowly changing climate is steadily increasing the wealth and productivity of Canada. When the Hudson's Bay Company first sent its fur-traders into that country, the region through which the main railway line of Canada now runs, and which is bordered on either side by wheatfields, was frost-bound most of the year. Even a century ago the territory to the north was too frigid for agriculture, yet a second railroad, paralleling the old trunk line, has been put through. So far as climate is concerned, the area of ground favorable to culture in Canada increases yearly. As, however, much of this is of old Laurentian rocks, with little soil, the expansion has followed the line of the Mackenzie River, which was less gouged out by the ice, and where the earlier soil remains.

Ancient civilizations, Asiatic, European and American, have been found farther south in the past than the civilizations of today. But the earth was cooler then, and, moreover, these tropical civilizations developed on high plateaus. In the case of America, the Aztec and the Inca civilizations, respectively, rose to their glory on the

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high plateau of Central Mexico and on the lofty plains which lie between the double ridge of the Andes and the Cordilleras.

The North American Indians, though migratory tribes, show in their history the same response to climate. Their earlier remains are more numerous in the south than in the north. Their wide cultural differences were mainly due to climatic conditions. This dependence upon the weather was better understood by the Indian than by the white man of today. It was with a conception of human dependence upon the powers of the sky that the Indians deified the sun, the rain, the clouds and the wind.

The later history of the United States bears an astonishingly close relation to questions of climate. It has been discovered that even small differences in temperature, in humidity, in season—even in the greater or lesser frequency of storms—have a rapid effect on the vitality. Just as one may feel energetic on a cool, crisp day, and languid on a hot, humid day, so, if the crisp or the humid conditions prevail for the greater part of the year, vitality will change accordingly. The history of states like Minnesota and Massachusetts, or like Arkansas and Mississippi, will show how enormously climate influences State destiny.

Viewed strictly from the climatic basis, Western Europe and the northern two-thirds of the United States are the only two sections in the world ideally situated, where the winters are not too

cold, the summers are not too hot, where the contour of the land is changeful, and where there is a constant succession of storms, giving greater activating energy in the atmosphere. High lands, in the temperate zones, with sufficient rainfall, are the centers of civilization, they, and they only.

The climate-energy area of Western Europe has dominated the world for a thousand years. Its political ideas, its social ideas, its inventions, its manufactures and its languages, are supreme. There is nothing in modern civilized America which is not either a direct importation from Europe or an American development thereof. The tentacles of European civilization embrace the whole world. Spain, France, England and Holland were the four forces which created the American people and the American spirit. Spain, alone, dominated Central America. Spain and Portugal stamped their character on South America.

On the other hand, the climatic energy of the United States is beginning to make itself felt with extraordinary swiftness. Applied invention and big business have, within the past half-century, proved to be such determining factors in the world's affairs that it is a matter of marvel how America has grown in the lead in these directions.

In a higher sense, the United States compounded the ideas of popular representation and the rights of speech obtained by England, with the ideas of liberty, fraternity and equality voiced by France

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in the eighteenth century. From these two she developed a conception of government and an interpretation of liberty which is neither French nor British. Herself an area of high climatic energy, these ideas not only flourished on American soil but became aggressive.

In a thousand ways it is seen that vital seeds of improvement and development which have been transplanted to areas of climatic depression—Guiana, for example—not only have not spread, but they have decayed and disappeared. American ideals suffer likewise by transplantation. Never can a colony or a possession be the same as the mother land.

In preparing the country of the United States for the people of the United States, climate, in itself the product of the great pulse-beats of air and sea, has been a mighty factor. Laved by favorable currents, fanned by favorable winds, set in the Temperate Zone, crossed by storm-tracks, elevated into healthfulness and blest by an ideally energizing climate, the United States was set apart and chosen to become one of the vital-areas of Civilized Man and one of the great nations of the world.

CHAPTER IV

PLANT AND ANIMAL LIFE

Food makes Man. Food makes Civilization. The thousands of avenues of commerce trace back to two primal human desires: better and more varied food, better and more varied shelter from the elements. The successive stages of Man's development were marked, mainly, by his relation to food.

The lowest stage was that of Man, the Wanderer. His means of food-finding was little different from that of the animals, since he lived on nuts, fruits, roots of vegetables plucked up by hand, wild honey and grubs. In some humble examples he was even a scavenger and ate putrid food.

The second stage was that of Man, the Hunter or Fisher. At this time he no longer depended on what chance might bring him, but set out to get his food himself. Thus he developed ambition and energy, and, after a time, inventiveness, since he learned to make weapons for the chase. Semi-domestication, as of the dog, began.

The third stage was that of Man, the Herder. At first he followed half-wild bands, killing the

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younger animals. Later he came to domesticate beasts for the purposes of slaughtering; later to weave their hair or wool into clothing; latest of all, to milk them and to make butter and cheese.

The fourth stage was that of Man, the Farmer. He not only used the wild plants that he found, but learned to till the ground and sow the seed. He became adept in chipping flints, but to make tools, not weapons. He first trained animals to serve for beasts of burden and of draft in the tilling of the ground. By his ability to store food-supplies in advance, he became the first to build towns and cities.

The fifth stage was that of Man, the Artisan. From the chipper of flints in a quarry, industrial development passed through all forms of skilled labor and all forms of commerce. By his efforts industrial centers were organized and transportation systems built whereby the Artisan could exchange his manufactured products for the articles produced by the work of the Farmer, the Herder, the Hunter and the Wanderer.

These stages did not follow one on another, either in point of time or place. The world is not so made that all sections of it are equally good for hunting, for herding, for agriculture, or for industry. Rather, areas suitable for these variant types of life are far apart. Development in each of these stages varies, hence all may and did exist contemporaneously.

A fur-world above, and a granary and pasture

below—such was the continent of North America when the first Americans came, and such it is today. It was thus divided and carved by that great master of land sculpture—the Ice Age.

The land of the hunter and trapper forms the northernmost of the four geographic provinces of America, and is known as the Laurentian Province. It runs from the mouth of the Mackenzie River through Lake Winnipeg, past Duluth, and thence turns east and follows the line of the Great Lakes and the St. Lawrence River.

As the ice of the Glacial epoch lay thousands of feet deep upon this area, it scraped away the soil. This region is now a waste of rugged hills, picture-puzzle valleys, small lakes, and crooked rivers. A thin pine-forest covers it. There is no pasture for herds, no soil for agriculture. It is barren ground, but, lately, has been turned to economic use for fur farms.

What was lost by the Laurentian Province, however, was gained by the territory surrounding it. The soil of the glacial drift, scraped newly from the primal rocks, containing all the chemical foods that plants desire, and not exhausted by thousands of years of weathering, is astonishingly rich.

The average value of all the farm land in some twenty Wisconsin counties over which the melting ice deposited its stolen soil, was almost \$57 per acre (in 1910) while, in thirteen driftless counties, the average value of the land was but

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\$33 per acre. The annual net value of glaciation to the Wisconsin farmers is put at \$45,000,000, and the estimate is raised to a billion dollars annually for the whole line of drift along the northern United States.

The second geographic province, known as the Appalachian Province, consists of the triple band of mountains running from Newfoundland to Alabama, and the plateaus depending upon them. The three bands may be termed the New England Group, the New York-Pennsylvania Group, and the Carolina-Tennessee Group.

The historical importance of these bands of mountains has been enormous. For centuries they barred colonial expansion, and, when at last the flood of people burst beyond their confines, the few passes through that barrier became the highways of commerce. New York owes as much of its riches to the fact that it is accessible from the interior as to the fact that it has a harbor on the sea. The Mohawk-Hudson route recurs over and over again, in every period of American history.

In like manner, Philadelphia was the first capital of the United States, and the cause of this lies in the fact that the hills are low behind the city, while the Delaware Valley is near by. Baltimore was favored by the Susquehanna and the Potomac. For the same reason, though Norfolk has a marvelous harbor and the rich Virginia plantations lay beyond, the port never developed;

the Appalachian barrier shut off access from the interior of the sea.

The third geographic province is called the Plains, but the name is confusing. As generally used, however, this province is divided into four groups, the Atlantic coastal plain, the prairies, the northwestern peneplain and the southwestern arid plain.

The Atlantic coastal plain consists of all the land between the mountains and the sea, from New York to Florida, and from Florida to the borders of Mexico, with a deep embayment up the Mississippi River as far as the Ohio. In general, the forest is pine, yielding tar and turpentine. There is a belt of black soil, and another band of yellow soil, both exceedingly rich, and the "black belt," especially, has played a very important part in the political history of the United States. A rich soil begets a conservative citizenry.

The prairies present, probably, the richest natural soil in the world, coupled to the most remarkable combination of natural advantages. The soil is glacial, some of it fine and wind-blown. It is, in the fullest sense of the world, virgin soil. The combination of an almost perfect soil in an almost ideal climate is unique on the Earth. Moreover, the prairies are well situated for transportation. Iron and copper lie near by, and coal underlies vast stretches of the region.

The peneplain of the far Northwest is very different. Its contour is rugged, volcanic mesas and

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dikes form natural obstacles, the rainfall is insufficient and the soil thin. Transportation is difficult. It is far from coal and iron and a long way from the sea.

The high plains range from the arid desert of the Southwest to the fertile grass-lands of Western Kansas. The ice never reached so far, and the soil is composed of gravel, sand and silt gradually washed down from the Rocky Mountains. It was part of the buffalo range, and is still one of the great areas of the cattle country of the West.

The fourth geographic province is the Cordilleran Province, running from Alaska to Mexico—and beyond. Unlike the Appalachian Mountains, the various ranges forming that great western uplift are all new. Erosion is seen at its most striking and early phase. Moreover, the movement of the western Cordillera is not at an end, as was shown by the San Francisco earthquake, though erosion is working with extreme rapidity where the rocks are soft. Soil conditions in this province are widely varied and consist mainly of eroded material from the recently raised hills.

Different climates, different peoples; different soils, different crops. The influence of these four geographic provinces persists all through American History.

The first intimate relation of soil is to forests and plant life, and, since "Man is what he eats," the question of plant life touches him nearly.

There has never been a time (though there may have been an occasional isolated tribe) when Man was not an eater of vegetable life as well as of meat. At first, this was confined to such products as grew wild—nuts, fruits and the like—but, later, Man learned to cultivate food-plants and improve them.

The characteristic forest of the Laurentian Province is coniferous, but it is threaded here and there with deciduous trees, notably the sugar maple, and the northern birch. In the northern section, however, the pines, firs, spruces, hemlocks and junipers add little value to the soil, and afford but a poor and meager home for Man, nor is their food value high.

The Appalachian Province is marked by a rich, deciduous forest: elm, oak, maple, beech, birch, chestnut, hickory, plane, basswood, locust and a score more varieties. In these forests there is a rich variety of plant food, and the hickory, especially, played a large part in the diet of the First Americans.

Long stick-like pines, with worthless timber and few leaves, the products of scanty soil, mark the pine forests of the Atlantic coastal region. They are sign-poles of poverty, and, in American history, the pine-barren folk have been a retarding influence for centuries.

The Plains are mainly grass-lands. They are barren of trees for a variety of reasons. Of these the two most important are that while the

soil above is loose, the sub-soil below is hard, thus giving an advantage to a shallow-rooted plant like grass and forming a hindrance to a deep-rooted plant like a tree. A second reason is that of climate. On the Plains, rains—when they do come—arrive in late summer, and trees, which need an enormous amount of water, especially in the early spring, are handicapped. Prairie fires and constant grazing by buffalo, destroying the young trees, also have kept the forests down. In the East, neglected grass-lands revert to trees; in the West, neglected wood-lots revert to grass.

All grasses are not alike. There is a wide difference between the short close turf of the Far North and the waving blades of the Pampas; between the luscious blue-grass of the Kentucky region and the harsh saccaton grass of Arizona.

In history, the character of grass has played an important part. The Kentucky colonel with his racing stables was a type which could never have developed in the bunch grass region. A large part of the Southern States is doomed to irremediable poverty, for lack of grass, with the consequent absence of the food-value contained in the dairy industry. The Sheep and Cattle War of the early eighties was over this question of grass, and the feeling is still so hostile that the Western States have adopted arbitrary lines of division between cattle land and sheep land.

Grass-lands and pastoral regions determine the

character of a primitive people, in history, not only because of the advantage that they give in the keeping of flocks and herds, but because of the barrier that they put to primitive agriculture. The wheat-lands of the Northwest, carved from the prairies, could only be turned into tilled land by heavy and powerful steel "breaking" plows. To peoples of the Stone Age, grass sod was an absolute preventive of crops. The dry grass may be burned off in the early spring, seeds may be dropped in holes punched with a stick—but no crops will come. The roots of the grass are not killed by the burning and the grass will strangle the sprouting seed.

Even with steel tools—which the First Americans did not possess—agriculture on grass-lands is extremely difficult without beasts of burden. Of these, Prehistoric Man in North America had none. When the whites arrived, the only domesticated creatures they found were the dog and the turkey. What else could there be? There were no horses in America until the coming of the whites, for all the Tertiary horses had died off before the close of the Glacial epoch. The camels had become extinct in North America, though a southern camel type, the llama, was domesticated in Peru. The buffalo was the only animal of the ox family with which the Indians came in contact, and it was too fierce and intractable a beast to lend itself readily to harness.

Forests of a close stand presented less diffi-

culty, for, in all forests, there are open spaces, of greater or less size, where the earth—composed largely of leaf-mold—is softer, and where a certain amount of cultivation can be done with a sharp stick. But cultivation on a large scale, in forests, was impossible to Primitive Man. Imagine the task of chopping down a big tree with a stone ax! This was an important factor in the fall of the Maya Empire, as will be seen later.

Cereals, however, form a highly valuable, if not a necessary part, of the food of Man. Before the days of agriculture, wild cereals had a vast influence on early American history. By far the most important of the uncultivated cereal foods of America was wild rice, just as corn came to be the dominant factor in the early American civilizations.

Wild rice (commonly miscalled wild or water oats) is a tall aquatic plant, from four to nine feet high, with a thick spongy stem, and plenty of broad leaves. It grows in all the states which lie along the edge of the glacial drift, in the Atlantic coastal plain and in the low-lying swamps, ponds and sluggish streams of the interior.

The main wild-rice fields have been the cause of incessant Indian warfare. Possession of them meant as much to large tribes, in the early history of America, as the possession of coal-fields means to Man today. The rice was widely used. Each family gathered from five to twenty-five bushels

of the food, measured after being threshed and winnowed.

From its food-value, wild rice is fully as wholesome and nutritive as cultivated rice, possibly more. It was used for thickening soups, as a vegetable, and was widely eaten with maple sugar. Wild rice gruel was a universal food for babies. It is clear, then, that the location and extent of the wild rice fields exerted an important influence on the history of tribal development.

Even more important was corn, or maize. The origin of this food-plant is lost in mystery. It appears far back, even before the earliest history of Ancient American civilizations. Its presence in prehistoric remains assures a prehistoric cultivation, which, in its turn, implies a prehistoric culture earlier than any of those of which traces have been found. Corn, in a cultivated state, has been found in the prehistoric graves of Chile, Argentine and Peru, in caves and cliff dwellings of Mexico and the southwest and from the mounds of the Mound-Builders, all over the Eastern United States.

Not only have grains of maize been discovered in these graves and mounds, but even baked bread has been unearthed, some of it made from white maize, some from blue maize, some from yellow. Indians of the southwest to this day prefer the greenish-colored bread made from blue maize.

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Brightly colored scarlet and black forms, also, were grown.

Prehistoric civilizations in America knew eight different kinds of beans, two kinds of peanuts, hickory and seven other kinds of nuts. Gourds, squashes and pumpkins were well known, and cultivated. The seeds of seven different sorts of soft fruits have been found in prehistoric graves, and there is no reason to doubt that of the twenty or more kinds of berries which the Indians eat today a large proportion were known in the earliest times. Among roots and tubers there was a wide selection, including two or three kinds of potatoes, yams, arrowroot, wild lily and yacon. Sugar, salt, spices and condiments to the number of a dozen or more were known. Nine different substances were used for making fermented drinks. In addition to tobacco, three other plants were used for smoking.

With rare exceptions, however, Primitive Man was not a vegetarian. There were two main reasons for this. In the first place, all crops are seasonal and some of them are hard to keep. In the second place, the collection of a winter store demands a foresight and a concentrated industry during the harvest period which Primitive Man did not possess. All foods to be collected in a wild state are widely scattered, their food content is small per plant, and the labor of gathering them is enormous.

Animals, however, live all the year round. They

may be eaten at any time of the year. As food, they satisfy hunger more quickly than vegetable matter. They supply a greater amount of energy per quantity consumed. Primitive Man, like modern man, neither wholly vegetarian nor wholly carnivorous, demanded a balanced diet. Hence it came about that the animal life of America, in the earliest period of Man, exerted as great an influence on history as did the finding of wild rice or the cultivation of corn.

In general, it may be said that there are few animals living on the continent which the early Americans did not eat. Included in their diet were bear, buffalo and beaver; moose, elk and deer; hares and rabbits; gophers and prairie dogs; geese, turkeys, and pigeons; fish of all kinds, oysters and shellfish, and even lizards, snakes and alligators. Such a list, however, must not be taken to mean that any one tribe had such a variety of food. On the contrary, the tribes which lived on fish rarely touched any meat; the tribes which followed the buffalo knew nothing of fish. The beaver belongs to the north, the alligator is found only in the south. The character of the development of early human culture, then, depended not only on the animals used for food but also on the habits of those animals.

The seasonal northward and southward migrations of the deer are not great, and the Indians to whom venison was the principal food maintained fixed habitations. Tribes who fished on

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a certain river, had permanent villages on that river. Peoples, however, who depended mainly on small animals and on a varied chase, moved at three or four-year intervals to sections of the forest which had been less hunted over. Tribes which followed the buffalo pitched their camp of skin tepees near the haunts of game, breaking and changing camp half-a-dozen times in a year. Tribes which neither followed the chase, nor agriculture, but lived in hand-to-mouth fashion on what they could find, such as the Ute and Shoshoni of the sage-brush country, made no fixed habitations at all, but erected light brushwood shelters, and deserted them as local supplies of food diminished.

In order to make clear the effects of climate and of food content on the First Americans, a rough comparison may be made between two Indian civilizations as they were when the white man encountered them. These two were the Haida civilization of British Columbia, and the Iroquois Confederation of the northeastern forests.

The Haida built long canoes of cedar logs. They constructed houses as large as a hundred feet long and forty wide. They carved wood, worked stone, and hammered copper. They understood decoration, both in architecture and in painting. They developed a system of money, using copper plates for the purpose. They held regular commercial fairs. They kept slaves. Social position depended upon the extent of a

man's property. The laws of property were exact. Justice was well administered. Education was so valued that rival villages would compete for prizes in oratory, in singing, in verse-making, as did the ancient Greeks.

What was the cause of their high development? The two chief causes that always operate on Man,—climate and food. The winters of the coast of British Columbia are cold but not severe. The summers are warm but not hot. The land rises sharply from the sea. Their location was near several of the great salmon rivers, and not far from the halibut grounds of Hecate Strait. Islands block out the surf of the Pacific, so that, for a hundred miles north or south the canoes of the Haida could travel in smooth water. Immediately behind their villages rose the mountains, heavily forested and well watered by the constant rains brought by the prevailing westerlies. This gave them an abundance of berries and nuts. Moreover, bear, big-horn sheep, mountain goat and other game could be found on the mountain slopes. There is probably no case of climatic influence more striking than this development of the Haida civilization, just at the very point where both the Pacific westerlies and the Return North Equatorial Current strike the American coast.

As the food supply diminished, southwards, the culture of the Indians decreased, from the fairly well-developed Chinook, to the low and primitive

condition of the Hupa and other California Indians. The Maidus of the Sacramento Valley lived largely on locusts, and the Moquelumne depended on a species of acorn. The Yumans of Lower California were little better than scavengers, and were fearfully diseased.

Climate played a large part in the wide differences of development among the Plains peoples. The finest tribes of this culture-group were the Dakotas and the Chippewas, who lived in the north, while the Yguases of Texas ate spiders and the eggs of ants, worms, lizards, snakes, clay and substances one does not wish to mention. But it is not to be forgotten that the Chippewas and Dakotas lived in the wild rice district, and thus had the greater store of energy provided by a variety of cereal and animal food.

The only civilization in North America comparable to the Haida was that of the Iroquois. In polity, especially, it ranked high. The tribal law was a code worked out in great detail and obeyed to the letter. The Iroquois had woman suffrage, and the laws of marriage and property were astonishingly equable. They built great houses of logs, two hundred feet in length, though narrow. They understood the art of fortification, even to the extent of building high walls broad enough for platforms from which arrows could be shot, and diverting streams of water to form moats. They wove cloth from the inner bark of trees, and understood the making of pot-

tery. Copper was worked into ornaments. There was a fully developed system of trade, and various forms of money, including wampum, were used.

Moreover, among the tribes of the deciduous forests, there is a remarkable example of the fact that climate was more important even than advance in agriculture. The Cherokees, in the South, had advanced further than the Iroquois in agriculture when the whites came, but seemed to suggest a people who were declining. Such tribes as the Onondagas and the Oneidas, in the North, were tribes rising into greatness. The colder weather and the higher land had developed more energy. Nothing, perhaps, shows this more clearly than the fact that some of the northern tribes, realizing that soil did not always retain its plant-food characters, had discovered the value of commercial fertilizers and used shells to give lime, and fish to give phosphates, to a depleted soil.

There was, however, one terrible disadvantage under which the Iroquois labored, and which prevented them rising to the high idea of property ownership that the Haida showed. This was due to the fact that, lacking iron tools, sooner or later the fight between Man and Grass would be won by the grass.

At first a clearing would be found in the forest, or, at least, a place where the trees grew thinly. The larger trees would be girdled, so that, after

a year or two, they would die, allowing the sunlight to pierce through. The ground was loosened with a stick and seeds planted. But, as soon as light and air were admitted to the forest floor, weeds would start to compete with the sowed plants for the right of growth, and, in the long run, the weeds would secure the supremacy. The hardest of all weeds to eradicate from a field is grass. So, little by little, the clearing would become grassier and grassier, the crops would produce less and less, until the clearing turned into grass sod and was abandoned.

It was this slow swallowing of the cornfields by grass which prevented the Iroquois villages from ever becoming towns, in spite of the high degree of advancement which the tribes had made. The same condition prevented the accumulation of property, since the Iroquois knew that, at least once or twice in every generation, all houses would have to be deserted, all fields would have to be abandoned, all the work would have to be done on a new site, and the tribe must begin anew in a new home.

More important, in a measure, even than meat or plant food, is milk. Riches and power, often royalty itself, have depended on this food. It underlies the history of the world. It is one of the motive forces of civilization. Yet, of this food, Early America had none.

Often called the "foster-mother of the human race," milk is the only perfect food. From China

in the east to Spain in the west, from Cape of Good Hope in the south to Lapland in the north, the mastery of Man in an early stage of civilization lay in flocks and herds. The development of European civilization lay always in the hands of the large land-owners, for these became the nobles of early times, yet the value of the ownership of land was less for purposes of agriculture than for purposes of pasture. Not only that, but the tribes or nations which possessed the largest herds became the dominating peoples of their time.

Milk produces a strong race, for it affords an ideal food for childhood, and, in its forms of butter and cheese, it is a food which can be had all the year round. Among a people possessing milch-herds, children can be weaned after the first year; otherwise, in the hunting stage, a child must stay with the mother for two or even three years. A milk-less people faced a low birth-rate, a large number of deaths in infancy, and an exhausted womanhood. It was one of the principal causes of retarded civilization among the First Americans that there were no milch-animals on the continent.

The milch-animals of the world fall into five groups: cattle, horses and asses, sheep and goats, camels and reindeer. Cattle are used all over the world. The milk of she-asses and mares is used by Cossacks and Tartars, also in South America. Goat's milk is even richer than cow's milk and is

used wherever the pasture is too scant for cows; while many of the most famous and delicate cheeses of the world are made from goat's milk. Camel's milk is used in North Africa and Arabia, sometimes in India. Reindeer are used only in the most northern latitudes, and are practically the only deer now used for milking.

The American representatives of these species were of no value as milkers. The buffalo, of the cattle family, was too wild. There was no representative of the horse family. The big-horn sheep and the Rocky Mountain goat are rare and shy creatures, living among inaccessible crags. The sole representative of the camel species—the llama of South America—refuses to give down its milk to Man. Of the deer family, possibly the white-tailed deer might have been domesticated, but there is no record of any attempt ever having been made in America, though a species of white deer was formerly used as a milch-animal in India. The early history of the continent, therefore, reveals this most important lack in the animal food of the First Americans.

Agricultural life, pastoral life, and hunting life produce their own characteristic social conditions. Of these hunting life is the most primitive. But, in many cases, it has been questioned whether the development of the higher civilization under the agricultural stage has raised or lowered the fiber of the race. An agricultural people may be a broadly developed people, but it

does not follow that they are the most finely developed people. On the contrary, civilizations which have grown up exclusively around agriculture have shown striking weaknesses, some of which will appear in sharp contrast in the history of the early civilizations of Central America.

Not the least of these conditions has been the fact that agriculture, being a safe pursuit, has failed to give the tillers of the ground that training in acuteness and that energy which is required of man in the hunting stage, nor yet that of man in the pastoral stage, ever on the alert to defend his flocks and herds against predatory animals and the raids of enemies. On the other hand, it develops a home-loving and patriotic people, which under stress, can be trained into a loyal soldiery.

When an agricultural people passes into the industrial stage, its independence diminishes and its patriotism declines. It exaggerates the faults of former stages. Predatory hunting is apt to become predatory commerce, agricultural thrift changes into the lust for gain. Agriculture leads the way to the use of better food and fermented drink. Industrialism degenerates this into luxury and drunkenness. Sedentary peoples have generally been drunken peoples, and the story of the rise and fall of civilizations shows over and over again the overthrowing of a sedentary people by some other race which has been either in the hunting or the pastoral stage.

The earliest history of America is not written on the tools and weapons that may be found of the first men, nor yet on the first human remains. The earliest history is written on that most marvelous and most far-spreading of all changes—Man's change from a natural to an artificial means of subsistence. When Man began to grow his food-plants, and to domesticate his food-animals he had passed over an immense gap. He had left Savagery behind and passed to Civilization. He had realized the fact that by his efforts he could win success. He had learned foresight, thrift and prudence. He had conceived the idea of the permanence of the possession of property.

It will be shown, presently, that there is reason to suppose that some of the earliest inhabitants of America, when they first came to this continent, had already taken this decisive step, but it will also be seen that other groups had not. For this reason, American History possesses a character unlike that of the history of any other country in the world—that of enabling the study of Savagery, Barbarism, and Civilization in process all at the same time.

There is a bigness in the history of this continent as a whole, and of the United States in particular, in that its origins are diverse and that its development has been upon a large scene. It is free from petty frontier disputes, far removed from the often sordid personal histories of kings and of favorites. Secret diplomacy has

given place to open discussion, tyranny to constitutional liberty. There is a breadth of view, of vigor, and of onward movement, which is aptly expressed in the cowboy's description of the country that he loved when he declared that it belonged "to God, the government and us."

CHAPTER V

THE FIRST AMERICANS

WHOSE naked foot was the first to step upon the sands or rocks of an American shore?

What manner of man was he, a dwarfish, low-browed cave-man with long and hairy arms; or such a being as Man of today, upright, and with good brains in his skull?

Was he white, black or yellow?

Could he cook, did he hunt, or was he still in the Wanderer stage?

How long was it ago?

Big questions these, and difficult to answer. Yet, with all their difficulty, they are not wholly unanswerable, nor should they be evaded. History must not slide over a period because information concerning it is scanty, nor should any American be afraid to peer into the darkness of human origins in his own land.

As often happens, it is the last question which must be answered first. How long was it ago? If the answer to this query should show that Man lived on the continent of America before the Ice Age, it is sure that he must have been very differ-

ent from Man of today, and his stage of culture must have been comparatively low.

The scale of time for those days of long ago is the Ice Age. The first query as to the First American, then, deals with the existence or non-existence of Man either before the Ice Age, during the early or later stages of that Period, or not until after the Ice Age came to an end. This question is all the more important because it is bound up with the problem of origins. It is necessary to find out whether the First American originated on this continent, or if he came from somewhere else.

The evidence so far produced stands squarely against the theory that the first human races in America developed from an early mammal stem on this continent. Everything tends to show that Early Man in America came either from Europe or Asia, almost certainly, Asia.

When was this immigration?

It cannot have been before the Ice Age, for none of the human or archeological remains so far discovered in America date back to Tertiary times. (Later discoveries may, possibly, modify this statement.) On the other hand, it is equally sure that many of these remains are earlier than post-Glacial times. The problem of date, then, lies in determining the period of the Ice Age to which these remains belong.

The Ice Age, it will be remembered, was not the result of a single world-wide uplift, but of a succession of uplifts, often local in character. More-

over, it was not merely a single descent of the ice, but a five-fold advance and retreat. Between each advance was a mild stage. The First Americans lived on this continent during one or more of these stages. So far, one is on safe ground.

Even this is early in Man's history. Such a man would necessarily be primitive. If living in the early periods of the Ice Age he would undoubtedly be the maker of very rough chipped flint weapons and tools, in other words, he would belong to the Paleolithic period of culture. If he lived during the last epoch of the Ice Age, or in the epoch immediately following the final gradual retreat of the ice, he would probably be in the Polished Stone or Neolithic period. In point of fact, the tools and weapons made by the First Americans can be classified into both these groups, Paleolithic and Neolithic. So far, however, discoveries in America have been so scattered that it is not possible to trace the sequence of prehistoric culture stages with the same exactness as in Europe.

A further difficulty in making comparison between Paleolithic and Neolithic Man in Europe and his compeers in America lies in the fact that the various advances and retreats of the ice on the two continents did not occur at exactly the same times, nor in the same ways. Moreover, as the rock strata of both continents differ, it is difficult to make correlations or comparisons.

American History must content itself with the

statement that Paleolithic implements have been found in early glacial deposits, and that Neolithic implements have been found in later glacial deposits. The oldest remains cannot have been less than five thousand years ago, and may have been more than fifty thousand years ago. Man, in America, is not a creature of yesterday.

There are five important discoveries on which all statements with regard to Paleolithic Man in America are based. Of these, that which seems to suggest the greatest age is a group of rudely chipped flints or paleoliths found in Kansas. They are declared to have lain below the second or Kansan glaciation. This would place the First American in the first interglacial stage. Modern remains were found in close connection with the old flints, however, and these caused the whole discovery to be called into question. The Kansas paleoliths, none the less, are the oldest so far found.

A far more decisive find was unearthed in glacial gravels near Trenton, N. J. Workers in a gravel pit found a number of chipped flints. Scientific expeditions carried on the excavating and human bones were found. Extreme care was taken to prevent scientific error, with the result that Man of the Trenton Gravel, in America, is as well-authenticated as the Heidelberg, Neanderthal or Cro-Magnon Man in Europe.

The age of the Trenton gravels, of course, is the determining factor to show the age of Trenton

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Man. Most American geologists hold these gravels to have been deposited during the Wisconsin or last glaciation, corresponding, perhaps, with the Würm Age in Europe. Trenton Man would thus be a contemporary of Cro-Magnon Man. Later explorations of the same stratum in other States have confirmed the Trenton find.

A human bone, found at Natchez, Miss., has caused much dispute. No trained geologist saw it in place. Its condition suggests extreme age, but, as its form is modern, and the stratum in which it is supposed to have been found is enormously old, scientists hesitate to admit so extreme antiquity for Man on such a slender clue.

Digging in a side-hill a cellar in which to store apples, a farmer, living near Lansing, Kansas, unearthed one of the great relics of America's past. This was the famous Lansing skeleton. It was found seventy feet in on a terrace of loess at the side of a valley and was twenty feet below ground. Later, near the entrance of the tunnel, part of a child's skull and some implements were discovered.

Geologists dispute whether this loess was a primary or secondary deposit. But, for historical purposes, it is enough to say that this skeleton belonged either to the Iowan or Wisconsin glacial deposits and probably does not differ greatly from the type of Trenton Man.

More ink has been spilt over the famous Calaveras skull than any subject in American arche-

ology. This skull was found by a miner in some gravels underlying lava beds which flowed down the Sierra Nevada in the Pliocene Period, hundreds of thousands of years before the Ice Age. But neolithic flints and articles even more modern were found. These disproved immense antiquity, yet, as though to enhance the mystery, exploration of these gravels by geologists supported the extraordinary statements made by miners. The Calaveras skull remains the "bogy" of American archeologists.

This specimen is now set aside, for, to admit its genuineness and that of the articles found with it would imply the existence of civilization in America a million years ago, and would overthrow the conclusion of all parallel branches of science. To suppose that Man could have remained unchanged, physically, mentally, socially, industrially and esthetically for a million of years, seems, in the present state of knowledge, almost equal to admitting a miracle. It is certainly too big a conclusion to rest upon a disputed skull-find.

The Calaveras skull, then, remains at the present in the state of "not proved." It is even treated with scorn by many writers on the subject. But it is to be remembered that if the Calaveras skull should be authenticated by similar discoveries in other strata of the same age, it might become the most important world-fact in prehistoric anthropology. It would give to the human race an antiquity vastly greater than that of the Trinil Race,

the dawn-man of Java, and it would show that, at this immeasurable antiquity, his skull was shaped like that of an Indian of today and his culture was akin.

So far, then, the way is clear for the first definite statement as to the First Americans. Man lived on the continent of America during the Ice Age. He was certainly in occupancy of a stretch of territory ranging from New Jersey to Minnesota at the end of that epoch; he may even have been here as early as the second—or even the first—division of that great succession of changes.

What manner of man was he? White, black, or yellow-brown? Or was he, perhaps, copper-colored, different from all these and representing a race of his own?

Here, again, the historian can take a firm stand. All the early remains of human skeletons which have been found in America show close affinities with the races which were in occupancy when the whites came. In other words, they are the skeletons of people from the same stock which produced those races now known as the North American Indians. Furthermore, the various types of North American Indians are all kin to the Mongoloid tribes of Eastern Asia and of Polynesia. The First Americans, then, were a Mongoloid people, belonging to the Yellow Race.

The proofs of the identity of the Indian peoples with the Mongoloid Race are numerous and have

been worked out with great detail. They may be summarized briefly:

While the color of the skin of the Indian varies, according to locality, from a dusky yellowish-white to a copperish chocolate, the prevailing color is brown. There is no white Indian, nor yet any black Indian.

The hair, in almost all cases, is black, medium coarse and straight; beards are rare and side-whiskers absent. The hair on the body is remarkably scant. The marked hairiness of the white man is always absent.

The Indian is generally free from any characteristic smell. In this he differs strikingly from all the Negro races.

The heart-beat of Indians of all tribes averages less than that of the whites.

The size of the head and the brain cavity maintain a definite relative proportion through all the tribes. It is larger than that of the Negroes and smaller than that of the whites of equal stature.

The eyes are dark brown in color, with the conjunctiva a dirty yellowish color instead of white. The eye-slits show a tendency to an upward slant, like that of the Yellow Race. In no case do the eyes of the Indian resemble those of the Negroes or the Whites.

The nose of the Indian is generally prominent or aquiline and the nostrils are straight, showing no relation whatever to the spreading nostrils of the Negro.

The jaws and teeth are very characteristic. They stand half-way between the protruding jaws of the Negroes and the straight jaws of the Whites. In details of teeth—always one of the critical questions in anthropology—the Indian stands out clearly. His teeth are larger than those of the European, while the upper incisors are curiously shovel-shaped, or concave on the inner side; the deep negroid tooth-processes are absent, or diminished.

In general form of body the neck is shorter than among the Whites, the chest is deeper, and the legs thinner. From some features of bodily structure which are so marked among Negro women, Indian women are absolutely free.

The hands and feet are smaller than those either of Whites or of Negroes.

A highly technical, but most striking feature, is that the length of the lower and upper bones of the arm, and the lower and upper bones of the leg are almost equal in length, again putting the Indian in an intermediate position between the Negro and the White.

The Indian, thus, shows no kinship either to the Black or White Races.

Comparison with the peoples living in other parts of the world shows that the various tribes of Eastern Asia and Polynesia, from Kamchatka to the islands of the South Seas, also have yellowish-skin, black hair, slow heart-beat, medium heads, brown eyes, slanting eye-slits, aquiline

noses, medium jaws, small hands and feet, and the same general characteristics both of skeleton and of outward form that is shown by the Indians.

This, at one blow, does away with all the fanciful theories such as that the Indians are descended from the Lost Ten Tribes of Israel; or that they were a Semitic people scattered at the building of the Tower of Babel; or that they were the aboriginal Irish; or that they were Egyptians who crossed the Atlantic Ocean by means of an imaginary island; or that they developed from some conjectural original home of humanity in the Argentine Republic.

All these guesses must now give place to historic truth. The close relation between the skulls of Prehistoric Man found in America and the skulls of Indians of today identify the former as bearing kinship to the latter. Likewise, the similarities which exist between the Indians and the Asian-Polynesians illuminate the vexed problem of origins.

The First American, then, who made his rude home on this continent at some time during the Glacial Period, was a man of the Yellow Race.

It is a very different story, however, to decide from what branch of the Yellow Race the First Americans came. Any statement that the First American resembled the Japanese of today, or the Chinese of today, or the Tartars of today, or the Malays of today, or the Hawaiians of today, would be sheer nonsense. Prehistoric Man in

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America was of the Ice Age and such races as the Chinese, Tartars and Malays had not yet developed to their present state.

From earliest times, America seems to have been destined to become a melting pot. Much of the mystery that hangs over the coming of the Early Americans disappears when it is compared to the coming of the Modern Americans.

America was an unknown land to the early voyagers from Asia, as it was to the early voyagers from Europe. Settlements were made at various places on the west coast of America by Asiatics, just as they were made on the east coast of America by Europeans. These Asiatic settlers came from different Asiatic peoples, just as the European settlers came from different European peoples.

The inhabitants of Iceland, Spain, England, France, Portugal and Holland settled on the shores of the continent, and, though they were all Whites, there is an enormous outward difference in the appearance of a flaxen-haired and blue-eyed Hollander and a black-haired and black-eyed Spaniard. In exactly the same fashion, the inhabitants of Kamchatka, of eastern Asia, of Malaysia and of Polynesia settled on the shores of this continent, and, though they were all of the Yellow Race, there was an enormous difference between the peoples of the frozen north and those of the coral islands of the tropical sea.

In prehistoric times, America was the melting

pot of Asia, just as, in historic time, America has been the melting pot of Europe.

Further, the various white races which came and are coming to America—Spanish, French, Dutch, English and (more recently) Jews, Italians and Slavs—are rapidly losing their distinctive national or racial characteristics. Partly by intermarriage, partly by differences in climate, partly by new forms of food, partly by changed habits of living, partly by altered social stimulus, these branches of the White Race are combining to form another branch of the White Race—the American. So, in the days of long ago, under a similar series of changes through intermarriage, different food and climate, the various branches of the Yellow Race combined to form what became a new branch of the Yellow Race—the American Indian.

It will be well to carry this comparison of pre-historic immigration with historic immigration a step further, for it is not only illuminating, it is also singularly close.

The immigration into America from Europe, which has continued, roughly, for a thousand years, was not a simultaneous movement of peoples at a given time. Rather it was a dribbling movement, a shipload or two at a time. Furthermore, these shiploads, coming at various times, and representing different peoples, not only brought different languages, but different customs and different stages of civilization.

A shipload of English in the days of the May-

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flower, knowing nothing of modern science, modern invention and modern industrial systems, would form very different immigrants from a shipload of English of today, well informed in steam, in electricity, in the intricacies of modern commerce, and possessing highly developed social freedom.

Even today, a shipload of immigrants from France, Belgium, Holland, Germany, Switzerland, Scandinavia or Italy means a very different addition to the well-being of the United States than a shipload of illiterate peasants from an area of neglect, or a horde of embittered people still rankling under the effects of a repressive tyranny.

The immigration into America from Asia, several thousands of years before, was of this same varied character. Some of the wanderers who came were in the most primitive stage, some had reached a certain point of civilization. Some came from high lands, and possessed warlike energy; some were the product of languorous climes, and were indolent. Some were hunters, some were fishers, some were agriculturists. Ever and anon, into a backward community, there might come the rush of some newly landed settlers of a more progressive type; while, on the other hand, some sedentary group, advancing into greater happiness through the Arts of Peace, would be swept into oblivion by a conquering horde of semi-savages who were able to take over only a small fraction of the civilization that the conquered had reached.

In a few cases these raids can be traced. The descent of the Nahua tribes upon the Mayas, for example, is a historic event as definite as the descent of the barbarians upon Rome; the southward descent of the Apache was an event fraught with as much significance to early American History as the occupation of Lombardy by the stern types of the North was to Italy.

Early American History must be reconstructed with infinite care, piece by piece, for the sufficient reason that the peoples of those times left no historical records. This, in itself, is a corroboration of the Asiatic origin of American civilizations.

It is one of the great characteristics of Oriental History that it has no dates. It is the great characteristic of Occidental History that it lays emphasis on dates. The Oriental mind was mystic, the Occidental mind was scientific. The Oriental looked to Eternity, the Occidental fixed his eyes on Time.

When it is remembered that there is no certainty with regard to the dates in such great historic civilizations as those of Babylonia, Assyria and Egypt, and when great civilizations such as the Hittite and the Minoan are little more than names, it is not to be regarded as surprising that the events of Early American History should appear vague.

In fact, if they did not so appear, if there were any evidence of closely dated historical record, such dates would, in themselves, be open to very

grave suspicion, for they would be out of the picture. If one is shown a perfectly done drawing and told that it is from the pencil of a child not two years old, disbelief is the first feeling, because it is known that children less than two years old do not draw pictures perfectly. If one is shown a perfectly dated series of monuments and told that they come from an infant civilization, one is inclined to disbelieve, for infant civilizations do not possess the elaborate calculating ability required to establish a means of recording time so that dates can be accurate.

What must be done with Early American History, then, is the same as must be done with early Oriental history, and, for that matter, with early European history. Calculation must be made from some casual reference to a natural occurrence—such as the arrival of a comet—which astronomers can trace back over its orbit to determine the date at which it appeared before. Sometimes, not always, such an event may serve as a historic clue.

Neither in Asia, Europe or America did Paleolithic or Neolithic Man arrive at the point of writing. Marked pebbles have been found in late Neolithic deposits, in Europe, and the spots on these are believed to represent numbers. Such a supposition, however, is little more than guesswork. Pictographs, or drawings and scratchings on stone, of an early time, have been found to possess some similarity in Bolivia, in Java and

interior China, but, as they cannot be deciphered, it is in vain to look to them for exactitude in history.

It is necessary, then, to consider some internal evidence of the passage of time which has not been directly perceived by a people itself, but which exists in their ways, in spite of themselves.

One of the most important of these is language. To illustrate: suppose three islands inhabited by native tribes in which there is a white admixture, and that, in the language of these three islands, respectively, the words for a traveling conveyance are "stage-coach," "steam-engine" and "aeroplane." Without going any further, there is evidence enough that the first island received some white immigrants in the Eighteenth Century, the second island in the Nineteenth Century and the third island in the Twentieth.

Languages of the early Americans show exactly this condition. Some of them reveal, by their character, that, when the first speakers of these tongues came over from Asia, they were already far advanced, having words for "fire," "planting" and even "copper." Other languages show none of these words as roots, and such forms as are used reveal that they have been borrowed from some other tongue.

A modern example of the same sort of thing proves that the motor-car industry was first developed in France, for words used in America, such as "automobile," "garage" and "chauf-

feur" (the latter two especially) are French words. The typically American word "skyscraper" is being adopted by other languages, little-changed, a sure evidence that it originated here. A close study of linguistics, then, will often go far to prove parallels of dates.

A word, however, is but a name. That which it names must exist. If, therefore, the word "planting" be in a language, the custom of planting must either be there or have been there. Similarly, the custom itself, if it is of the same character as a similar custom somewhere else, must either have come from there or must have gone to there. Some customs, moreover, are curiously persistent, and students of folk-lore know well that such apparently idle things as the character of children's games throw a flood of light on some of the most obscure points in history. The Cherokee origin of baseball is a case in point. A still more famous one is cat's-cradle, that interweaving of a loop of string around the fingers of both hands.

While customs are curiously persistent, and the human race seldom actually drops anything it has once adopted, new ideas are easily caught, and they spread with enormous rapidity if their usefulness is great. Take the most simple of cases: suppose an island or a continent, inhabited by a tribe which did not know the use of Fire; suppose one poor castaway thrown on the shore of that island, a man who knew how to make fire by rubbing two sticks together, or with the use of a



Courtesy of The American Museum of Natural History.

THE MAN OF HEIDELBERG.

Some scientists believe that the primitive man of America was contemporary with the man of Heidelberg, who was of the first human race recorded in Western Europe. He appeared early in the second interglacial times and was more human and less ape-like than the Trinal man. From a restoration by the Belgian artist Mascre.



THE APE-MAN OF JAVA.

The antiquity of The Trinal Man of Java is estimated at 500,000 years. This head is a restoration by J. H. McGregor of the American Museum of Natural History.



Drawn by Charles R. Knight.

**FLINT-WORKERS OF THE NEANDERTHAL RACE AT THE ROCK SHELTER OF
LE MOUSTIER.**

These men were the first makers of stone tools and weapons. They lived in rock shelters in Dordogne region in France about forty or fifty thousand years ago and well represent the first stage of culture found on the American Hemisphere.



Drawn by Charles R. Knight.

CRO-MAGNON ARTISTS IN THE CAVERN OF FONT-DE-GAUME.

The Cro-Magnon type of *Homo Sapiens* was a race inhabiting Southwestern Europe about 25,000 years ago. These men were the first artists of which we have any record. They are shown here in the act of drawing the outlines of a Bison on the cavern walls. They were a race with a brain capable of ideas, of reasoning, of imagination and more highly endowed with artistic sense and ability than any uncivilized race which has ever been discovered.

bow-drill. Even if he married into that tribe, the blood of the one man would not be enough to alter the race, and in a few generations there would be no physical trace left of his existence. But he would have taught fire-making to a few of his captors, who in turn would have taught it to others, and, shortly, the whole civilization of that island would advance.

This, evidently, often happened in the Early History of America, and the failure to realize the importance of successive and varied immigrations has caused great confusion. While—in the light of the evidence that has been given—no one will deny that the First Americans were assuredly of the Mongoloid Race, there is nothing to prevent the possibility that there may have been minor immigrations from other points than Asia. It is highly unhistorical to deny a possibility for lack of proof.

While it is most unlikely that the land-bridge between Europe and America existed at the end of the Glacial Period—the time of Trenton Man in America—it is not impossible. It is probable that the strait between the continents was narrow. It is not altogether out of the question that a boat might have been blown to the West Indies from Europe and that the West Indies were connected by land with North America. Should, then, some evidences be found of the impact of the civilizations of Europe or of Africa upon the North American or South American tribes of the east-

ern coast, this would not of itself be astounding, nor yet would it alter the basic fact that Early American culture was mainly Asiatic.

The land-bridge between Europe and Asia, however, was broad and firm. Alaska was joined to Siberia; the line of the Aleutian Islands and Japan formed another chain. Furthermore, even in dim prehistoric times, the Polynesian peoples had early become great boatmen. They lived on nothing but fish, they spent all their lives on the sea, they were warriors and cannibals, and went journeys of considerable length to fight their enemies. Both wind and current set directly from Polynesia to the South American coast. It would have been astonishing if they had not found America.

The Early History of America, then, is a History of Immigration. It begins, possibly, in the early stages of the Ice Age; surely, in the latter. It was neither as continuous nor as regular as the European immigration of the last thousand years, but rather by fits and starts. The immigrants came from a longer stretch of coast. They were more widely divided into branches and sub-branches. There was a greater variety of languages and dialects. They represented a considerable diversity of stages of culture.

A further cause of ethnic and cultural confusion was the fact that there was no cartography in those ancient days. When Columbus sailed for America he was a cartographer himself, and had

maps. After the discovery of the West Indies, charts could be drawn to show a sailing course and navigators could reach a destined point. But, in the immigration from Asia, thousands of centuries earlier, there were no charts and no sailing directions, no compass nor quadrant. Hence a second party of immigrants might not—and probably would not—land on the same part of the coast as the first party. They had no means of knowing where their friends were. They might find themselves on an inhospitable shore, they might find themselves near a village of people weaker than themselves whom they would conquer and enslave, they might run into the jaws of a powerful tribe and be themselves enslaved.

Over the land-bridge by Point Barrow and over the long Aleutian Islands spit, drifted parties of hunters, leaving lands from which the game had gradually been exterminated by centuries of hunting. They would be flushed with triumph in finding a game-filled wilderness. The stronger tribes secured the best hunting grounds, the weaker were driven out. Coming, perhaps, between periods of glaciation, as the ice descended anew, they were forced to move south, not in one stream, but in several. Thus the hunting tribes peopled the interior.

Blown by the westerlies of the roaring forties, came parties of the great canoe-builders of Eastern Asia. These were the fishing tribes who lived along that three-thousand-mile-long stretch from

Kamchatka to the Philippine Islands. At that time the Okhotsk, Japan, Yellow and China Seas were but lakes, or at least bays entered by narrow straits. These fishermen came to the coasts of British Columbia, and there set up the beginnings of what afterwards became the Haida civilization.

Far to the south, the warrior boatmen of Polynesia—led by a succession of small islands reaching to within a few hundred miles of the South American coast, blown by favoring winds, and aided by kindly currents—reached the coasts of Chile, Peru, and Ecuador, and became the forerunners of the prehistoric civilizations of the pre-Incas and Chimu.

From that time onwards, from Siberia, from Japan, from China, from Formosa, from the Philippines, from Borneo, Celebes and New Guinea, and from all those thousand islands classed as Melanesia, Micronesia and Polynesia, trickled an intermittent stream of immigrants. Some came in large enough numbers to give a touch of their special character to the race of the First Americans; all brought some peculiarity of language, of custom, or of culture, which was to go through the hard process of selection.

Several scores of sub-races of the Mongoloid stock sent, at various times, immigrants into America. Some came by land, some by sea. Some were advanced, some primitive. Those who landed toward the south wandered north; the northern immigrants made their way south. Oth-

ers drifted along the coast and then struck inland, while some wandered along the eastern slopes of the Rockies and turned coastward. All this confused mixture of peoples, talking different languages, having different customs, operated on by a changing climate, mixed, intermingled and broke away, only to mix again anew. The tangle is all but inextricable. The earliest picture of the American Peoples, in history, is that of a moving kaleidoscope pattern in which one can discern, here and there, bright spots of single color, which, as soon as the attention is fixed on them, fall behind some other spot and the distinctive color is gone.

Peering back through the dim ages at this moving confusion of shifting scenes, of unsynchronized times, and of diverse peoples, students of human geography endeavor to separate two main groups of races, at least. These are the southern immigrants to South America, who came by way of the Polynesian sea-bridge, and the northern immigrants to North America, who came by the Behring Sea land-bridge and by the canoe route under the westerly winds.

Anthropologists, studying the human remains of North America, and the tribes who were here when the whites came, find four different types of skull. These are: a high long-headed type in South America; a medium long-headed type in North America; a round-headed form in the Central States, and a flat-headed form in the southwest and in Central America. These skull-types,

however, as the history of the immigration would suggest, are confused both as to place and type and there is every possible gradation between them.

That the round-heads came first, the southern long-heads second, the flat-heads third, and the northern long-heads fourth, is a theory exquisitely simple. But simple explanations of difficult problems are very rarely true. Rather, the fact seems to have been that round-heads, long-heads and flat-heads trickled over to different points at different times, conquered and were conquered, were absorbed or fled.

Yet, when every care is taken to avoid overstatement, there seems to step forth, from all the confusion, a dim and phantom generalization of America's first immigration. It fits, in a measure, the requirements of primitive human geography and anthropology. It suggests a round-head drift from the Behring Sea of the remote ancestors of the Mound-Builders, a long-head immigration over the South Pacific of the ancestors of the Incas; a flat-head movement over the North Pacific to British Columbia, which joined with others to become the ancestors of the Aztecs, and a second long-head drift over the Behring land-bridge of the ancestors of the Indian hunting tribes. Some such movement there must have been, but the details are lacking.

The early horizon of American History is lost

**in the mists of antiquity, yet, in the haze, appears
this faint vision of yellow-faced hunters, fishers
and warriors, coming from the Land Where The
Sun Sleeps to populate a New World.**

CHAPTER VI

THE MOUND-BUILDERS

HUGE circles and squares of magic, strange earth-sculptures of animals hundreds of feet long, fortifications which extend for miles, and lofty pyramids of several stages, stud the United States in thousands. Each one is a mystery. Truly it is a misnomer to call Modern America a New World. It is vibrant with unsolved secrets of antiquity. Not the least of these is the problem of those mysterious peoples—the Mound-Builders.

Between the First Americans, whose remains are found in the glacial gravels, and the First Civilized Americans, who built great cities in Central America, there is a historic gap. This gap, however, is partly bridged by the builders of the mounds.

These peoples of mystery, the Mound-Builders, have ever been a fruitful source of controversy. It was once believed that they belonged to some entirely different race from the Indians, and that they represented an ancient civilization which had been destroyed by the invasion of the hunting tribes. That belief has been abandoned.

Fifty years of examination of the shell-heaps or kitchen-middens of the Pacific and Atlantic coasts, of the animal mounds, of the earth-works, of the pyramids, and of the burial mounds of the Mississippi Valley have shown positively that the men who went to the incredible toil of making these huge structures were of the Yellow Race. In point of workmanship the articles found in these mounds lie midway between the chipped flints discovered in the glacial gravels and the tools, weapons and ornaments of Indians in historic times. The burial customs, which are numerous and varied, find a counterpart in Indian customs.

It is not necessary to go back even so far. Since the arrival of the Whites, certain Indian tribes—the Cherokees, for example—continued the habit of building mounds. Moreover, in some of the mounds of recent date, articles of European manufacture have been found. Such modern discoveries, however, must not blind the investigator to the fact that some mounds are extremely old and were made by different peoples in different ages. One must think, not of a single people of Mound-Builders, but of many peoples who built mounds in many different ways.

The builders of the mounds, then, were a part of that long Asian immigration. They were neither North American Indians—which is a composite term including all the races found on this continent at the coming of the Whites—nor were they a separate primitive race. They came from

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the mound-building peoples of Asia, who, themselves, are varied. After their arrival in America, later immigration changed them. Some were conquered and became extinct. Some wandered into new regions. Some taught mound-building to the incoming tribes. Some developed and became strong tribes, which, later, were grouped among the Indians. Some advanced, some degenerated. In many cases, they must have occupied a given range of territory for centuries.

Yet the Mound-Builders cannot claim priority in American post-glacial history. Earlier than they were the wandering tribes of the coast, who, coming over from Asia, settled on the shore and lived mainly on fish and shell-fish. As there is little food value to a clam in proportion to the bulk of shell, and as it takes a great many clams to make a meal, the discarded shells would heap up near the dwelling-places. Some of these piles, or shell-heaps, reach enormous dimensions.

The most important, from the point of view of antiquity, are the shell-heaps or kitchen-middens of the Lower Fraser River in British Columbia. Of these there are some scores. The largest of them is bigger than any of the famous kitchen-middens of Denmark. It is worthy of careful study as probably one of the oldest evidences of Man in America during the period immediately following the Ice Age.

It is a matter of remarkable interest that these shell-heaps are situated on the coast just exactly

where the currents of sea and of wind (as have been shown) blow directly from Asia to America. Moreover, if it be that these immigrants came over the Siberian-Alaskan land-bridge, this coast line of British Columbia would be one of the first places they would reach from which the ice had been cleared. Either by sea or by land, then, one would expect to see the first signs of post-glacial habitation exactly where they have been found.

Of these shell-heaps, the "Great Fraser Mid-den" is over 1,400 feet in length and 300 in breadth, and covers over four and a half acres of land. The shell remains extend to an average depth of five feet, reaching fifteen feet in places. As, during the millenniums that have passed since they were abandoned, the shells have begun to crumble, this depth is probably much less than it was originally. It would not be extreme to suggest an average depth of seven or eight feet at the time of the abandonment of the shell-heap by its builders.

The evidence of forests which have grown on top of this shell-heap—several of the more recent trees of which have been shown to be from 500 to 700 years old—reveals that considerably more than a thousand years must have passed since this shell-heap was deserted, probably two thousand years, for soil requirements suitable for the growing of such trees would not develop for many centuries after the abandonment of the pile. Clamshells are not soil.

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A further proof of the antiquity of this shell-heap is the extreme friability of the shells. Clam-shells, as is well known, are one of the most enduring things in Nature. After a thousand years, they are found as tough as though they had grown but yesterday. Yet the shells in the Great Fraser Midden crumble to powder at a touch.

Many bones were found in this shell-heap, bones of different periods. Their state is even worse than that of the clam-shells. Only with the greatest care, by a liberal use of glue and such like preservatives, were the explorers able to rescue the pieces of bone whole. When the spade uncovered a skeleton lying in place, unless great care was exercised, the wind would blow it away. Such conditions show extreme antiquity.

Wood, especially tough wood, lasts a long time without rotting. Yet, though several stone ax and tomahawk heads were found, weapons which were undoubtedly made to be fitted with wooden handles, none of the handles were found, not a splinter of wood of any description.

Yet this is but the beginning of the proof of antiquity. The Great Fraser Midden does not lie on the sea-coast, as would be expected. It lies up the right bank of the north arm of the Fraser River, six or seven miles up from the present mouth of the river, and far from the clam-beds. More, smaller shell-heaps apparently more ancient still, were found fifteen or sixteen miles up the river. Geologists found that the mouth of

the Fraser River, at the close of the Ice Age, was at least twenty miles higher up than it is at present, or, in other words, that the sea ran twenty miles further in on the land.

There are islands opposite and around these middens, and the only reason which can be given for the selection of this place for a permanent encampment of the Clam-Eaters was that, at the time they lived there, these islands had not arisen from the sea, but were still tidal flats, ideal spots for clams. The forests on the islands—on one island at least there are evidences of three layers of forest—would throw the period back several thousand years to the time when these islands were tidal flats and clam-haunts.

The discoverers of these middens, careful scientific workers, are unwilling to name a possible date for the period of the Great Fraser Midden, but point out that it is larger and fully as old as the middens in Denmark, which have been dated from 5,000 to 10,000 B. C. Moreover, there seems reason to suppose that the Clam-Eaters were driven out or conquered by the natives of the Salishan stock, whose migration to this country is generally placed quite early. Caution suggests that this date may be extreme, for the retreat of the ice in British Columbia need not have been so long ago.

There remains, still, the most positive proof of all. A very close examination of the Great Fraser Midden reveals that the lowest layer of shells lies directly upon the glacial gravel. There is not the

slightest evidence of humus or soil, not the faintest sign that any vegetation ever lay under the shell-heap. The line of division between the shell and the gravelly sand is clean and sharp, whereas, on every side of the midden the soil is rich, dark and nearly a foot deep. There seems no reason to dodge the clean-cut statement that this Fraser shell-heap was made by the Clam-Eaters soon after the ice of the last stage of the Glacial Period retreated from British Columbia and before the post-glacial vegetation had begun.

This is, therefore, a link between the Man of the Trenton Gravel and Post-Glacial Man in America.

This British Columbian link is supported by the investigation of ancient burial mounds in the same region, some of which can be shown to be more than 1,500 years old, and which are obviously later in date than the shell-heaps or kitchen-middens.

On the Atlantic coast, especially in Florida, enormous shell-heaps have been found, almost rivaling those of the Great Fraser Midden in size, and in larger numbers. They are found on the shores of almost every ocean inlet where shell-fish now thrive or where they thrived hundreds of years ago. They are also found on the banks of the Mississippi River as far as Northern Wisconsin and on the Ohio River as far as Pittsburg.

The shell-heaps of Florida are clearly not of the same antiquity as those of British Columbia, yet one of America's foremost archeologists, who has

studied these shell-heaps very closely, has reached the conclusion that the Atlantic middens were not all deposited during the same period, but belong to different dates. Thus, rude neolithic chipped flints have been found in the lowest stratum of one of the Florida shell-heaps, well-shaped and colored pottery in the upper stratum of another.

Tools and weapons found in the shell-heaps and in the mounds do not show any great differences. Nothing has been found in the oldest deposits of either to suggest a non-Mongoloid race. Moreover, the theory of the existence of a fanciful "Mound-Builders' Empire" is face to face with the supreme difficulty of explaining whither and how this great race disappeared.

Again it is to be emphasized that the word "Mound-Builders" is no more a descriptive term than the word "Indians." There are several stocks among the Indians, there were several stocks among the Mound-Builders. There were many different kinds and stages of culture among the Indians, likewise there were many among the Mound-Builders.

It is a truer picture to look on mound-building as a phase through which some of the stocks ancestral or kin to the Indians passed during the period between the close of the Ice Age and the coming of the whites. Moreover, as the "close of the Ice Age" is itself a term without definite date, American History must content itself with the statement that the Glacial Age reveals Prehis-

toric Man as Trenton Man; the period after the close of the Ice Age reveals Proto-historic Man, first in the shell-heaps, next in the ancient mounds, and then in the recent mounds which are contemporaneous with the coming of the Whites.

The Golden Age of Mound-Building lay in the thousand years preceding the arrival of Columbus. But Golden Ages do not spring into existence suddenly. They prove an earlier period of slow development. There are abundant reasons for ascribing to some of these earthworks, notably those known as animal or effigy mounds, an antiquity of two or even three thousand years.

Such animal or effigy mounds on the North American continent are by no means rare. Including both those which are definitely and conclusively sculptural and those which are merely suggestive outlines, nearly two thousand have been reported. Of these, at least five hundred are unquestionably intended to represent beast, bird, reptile or fish.

For those who are over-eager to find resemblances, almost any artificial mound of irregular shape may seem like a crouching animal, a wriggling reptile or a finless fish; for those who are over-skeptical, any animal form, no matter how clear its outline, would seem nothing but an irregularly shaped mound. Modern research, however, coupled with exact surveying measurements, prove the exactness of some of these animal shapes. A few human forms have been recog-

nized, but fewer than had formerly been supposed.

The size of some of these effigy mounds is enormous. Among the human effigies there are three mounds, each of which is more than 100 feet long from head to feet, and they are raised from the ground like bas-relief, four to six feet high. Several of the buffalo-shaped mounds reach 150 feet in length, with a width from hump to hoof of 60 feet, and are raised five to six feet from the ground. This represents a construction of 18,000 cubic yards of earth. When it is remembered that the Mound-Builders had no shovels, nor metal tools of any kind, the construction of such immense mounds reveals either a large population, or years of labor.

If these mounds were isolated, and only occurred at remote distances from each other, the work involved would not be so surprising, for it might be assumed that the effigy mound was the work of an entire tribe which gathered there for some religious festival. But the effigy mounds are rarely found single. On the contrary, most of the groups contain from four to six animals. One group, in Wisconsin, represents a long procession of different animals, interspersed with mounds whose shape gives no clue to their meaning, and the whole follows, at intervals, a natural ridge, nearly five miles long. Another, representing a flock of birds, is divided into three groups, and there are thirty birds in the three groups.

Undoubtedly the most famous of all the animal

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effigies is the Great Serpent Mound of Ohio. This is built upon a very curious spur or ridge, which rises 150 feet above Bush Creek. The figure is that of a long serpent, curved and winding as though in act of movement, a large oval having been built in front of the open jaws of the serpent. The oval, or egg, is perfectly regular in outline, and is 160 feet long by 80 feet wide. The length of the serpent, along its convolutions, is 700 feet, this terminating in a coil in the tail. Beyond the oval or egg is a slighter elevation, which some observers have taken to be the hind legs of a frog. Stones showing the marks of fire, and suggesting that the oval had been used as an altar, lie close to it.

The famous Elephant or Mastodon Mound, found in the Mississippi lowlands, eight miles below the mouth of the Wisconsin River, has been the center of a whirlwind of dispute. If there were certain proof that this mound really represented an elephant, mammoth or mastodon, it would show that the builders of it either had lived in the days of the mastodon, or had seen some representation of an elephant. In the first case, it would throw the age of the mound back to an immense antiquity; in the second, it would suggest either an African or Central Asian immigration. Neither of these conditions is impossible, but both are improbable.

In any event, the evidence is not strong enough to require such drastic theories. The ridge which

seems to suggest the elephant's trunk is faint, much lower than the rest of the body, and fades away before it reaches the tip. Without this slight extension of the head, which, by some, has been thought to look like a trunk, the effigy would well serve for that of a buffalo. As there are nearly eighty mounds representing buffalo and only this one which vaguely suggests an elephant, there is much reason for doubt.

These effigy mounds are found in the greatest numbers in the Wisconsin Mound District, which includes the southern half of Wisconsin, a small part of northern Illinois, and the extreme northeast corner of Iowa. With rare exceptions, animal mounds are not found in any other part of the country.

The animals represented are confined to those which lived in America after the Ice Age and before the white man came. There is no example of animals now extinct, nor of the horse and the pig, which are recent importations. The mounds may be totemistic, that is, they may represent the clan or family of some branch of a tribe, but the fact that the animals are so often repeated in the same place casts doubt on the theory. Frankly, the cause of the building of the effigy or animal mounds is a mystery which has not yet been solved.

With regard to the fact that the effigy mounds are older than the burial mounds there is the indisputable evidence of the fact that bones some-

times—but rarely—taken from the effigy mounds are ready to fall into dust, while those taken from the burial mounds are in a perfect state of preservation. Very few skulls have been taken out from the older works and these have been in a greatly crushed condition. They are believed to show some differences in structure from the skulls found in the so-called burial mounds. The relics found in the effigy mounds also are unquestionably older, but how much older it is impossible to say. In date, the effigy mounds of the Wisconsin District succeed the shell-heaps of British Columbia, with, probably, a gap between.

The burial mounds and earthworks appear to fall into the period of the thousand years prior to the coming of Columbus, but, in general, the earthworks seem to be the older. These reached their greatest extension in the Ohio Mound District, which includes the State of Ohio, the western part of West Virginia and the eastern portion of Indiana. This is the region of vast inclosures built in circles, in squares and in triangles, with long lines of parallel walls, and with mounds containing inner structures of clay on which a fire has burned, and which are known as altars.

They are of immense size. Thus, the group at Marietta comprises a square enclosing 40 acres of land, surrounded by a wall, 6 to 10 feet high, and 25 to 36 feet in breadth, pierced at each side by three gates; a sunken way with parallel walls, 680 feet in length and 21 feet high on the inside; an-

other circular inclosure of 30 acres, joined by a short undercut way to an octagonal inclosure of 50 acres, which is again joined by a 600-foot long undercut way to a square of 200 acres, in the wall of which way is a double semicircular parapet; each of these inclosures has gateways and most of the gateways are commanded by circular mounds. Besides these, there are two pyramidal squares of large size, one 188 x 132 feet, the other, 150 x 120 feet, both of them 9 feet high. On the outside of the smaller square is a sugar-loaf mound, in the form of a perfect circle, 115 feet in diameter and 30 feet high. It is surrounded by a ditch 4 feet deep and 15 feet wide, and encircled further by a parapet 4 feet high, pierced only with one gateway.

These elaborate earthworks are not rare in Ohio. There are similar large groups at High-bank, Hopeton, Liberty, Cedar Bank, Clark's Works and Dunlap's Works, and smaller ones elsewhere. Constructed, as they must have been, with rude stone tools and baskets to carry the earth, the amount of labor involved in them is even greater than in the effigy mounds. The conclusion is obvious. Either there was once a large population of Mound-Builders in Ohio, or the builders of these earthworks must have lived there a long time. There is no evidence to show that a large population was present, therefore these earthworks must represent construction lasting over a period of many centuries.

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The pyramidal mounds represent an entirely different group. It is because of the character of these that some people have suggested that the Mound-Builders were either a debased offshoot of the races which formed the great civilization of Central America and built the huge pyramids there, or else that the Mound-Builders were the ancestors of the Central American people and that these mounds represent their earliest efforts.

Modern research suggests that among the various parties of immigrants from Asia were groups of the Asian pyramid-mound builders, who, arriving from different points in Asia, at different times, brought with them the mound-cultures which had been begun on the other side. These they developed independently of each other, in various centers of this country.

Thus the pyramid-mound builders in Ohio, and the pyramid-builders in Mexico may well have come from the same Asian stock. It is a well-known phenomenon that change of location and of climate, especially if it be allied to isolation, will often cause a racial group to flourish and to branch out, but that, in no two neighborhoods, will the development even of the same branch be alike. Such a condition would account for the wide distribution of the mounds, all over the United States, and, at the same time, for the fact that the earthworks fall into definite districts in which the types are radically different.

Of the pyramidal mounds, undoubtedly the

largest and the best-known group is the Cahokia Mound and its surrounding works. Truly, the Cahokia Mound is immense. It covers eleven acres, (equivalent to about 700 feet square), reaches the height of exactly 100 feet and contains 11,000,000 cubic feet of earth. It was surrounded by forty-five smaller mounds. Within a distance of three miles were eight others of large size, and there were a large number of small walls or elevations besides. Some of the surrounding mounds, especially one known as the Sugar Loaf, were clearly connected with the Cahokia Mound. Seventy-two mounds, in all, appear to have formed a definite group round the central pyramid.

The character of this pyramid is all the more surprising when its formation is considered. It is in four irregular stages. The first, which is the steepest of the four steps, is fifty feet from the ground and is reached by an inclined way. This platform is a little less than one-third of the surface of the mound. The second platform is thirty feet higher and occupies one-half of the remainder of the top, facing at right angles to the first platform. The third platform is twenty feet higher still and is almost square, again dividing the remainder in half. The fourth, or topmost platform, is ten feet higher, and is also square. It is large enough to accommodate more than a hundred men, and the pyramid would afford room for a thousand worshipers. The symmetry of the mound is extraordinary.

The purpose of the Ohio mounds has been established with a certain amount of definiteness. The Cahokia Mound, from its character, is believed to have been a temple mound, and to have been allied with religious observances. The surrounding mounds, great and small, were probably used for the dwelling places of chiefs and sub-chiefs. Other smaller mounds were burial places. The whole represented a Mound-Builder metropolis, and that it must have been populous is evidenced by the large number of human bones plowed up in the vicinity. Chipped flints, primitive pottery and other relics of the past have been found, not in scores or hundreds, but by thousands.

Just as the Wisconsin District is characterized by animal or effigy mounds, the Ohio District by inclosure mounds, and the Illinois District by pyramidal mounds, so there are stockade and wall mounds all through the New York State District. They are regarded as being in the nature of forts, since, in almost every case, they are built at the edge of natural locations suitable for defensive purposes. They vary greatly in height and size. Most of them inclose an area of some 15 to 20 acres, though there is one which is 95 acres in area, or a seventh of a mile square. Many of these, such as Hill Fort, Fort Ancient, etc., would be almost impregnable strongholds to an enemy attacking with nothing but stone weapons.

Burial mounds, as such, comprising small tumuli from 3 to 10 feet high, to mounds 60 to 80

feet high, are found all over the United States, sometimes in connection with other mounds, often in groups. Their principal interest lies in the fact that they show enormous differences in the methods of burial, and this, as is well known, is one of the most remarkable of all differences. The habit of burying in a certain manner persists for centuries and is almost always a clear clue to the people who have occupied the section.

Yet, in the various burial mounds scattered over the United States, there are at least eight different kinds of burial. Thus, in some mounds the skeletons are placed one each in a small mound; in others, they are laid in rows or in circles; in some, they are recumbent; in some, sitting. In some mounds, the dead have been buried with weapons and pottery; in others, not even a chip of flint has been found. In some, there was a considerable bed of charcoal, showing that some kind of sacrifice had accompanied the funeral ceremonies; in others there was no sign of fire. Some were protected with stones, even showing a knowledge of vault-making; in others, the earth was heaped directly over the bones. Some were tribal, some were family, some were individual. In short, study of the burial mounds not only adds to the conviction that the Mound-Builders were a sun-dered group of peoples but it also gives the impression that the burial mounds belong to different dates, probably covering a period of a thousand years, or even more.

Such a wide variation in burials, and such an enormous difference in the kinds and types of mounds prepares one naturally for the discovery that the skeletons found in the mounds do not represent the same type. Scarcely enough emphasis has been laid on the fact that many such skeletons are of men taller and heavier than those of the Indian tribes. Some have been reported as the skeletal remains of men almost seven feet high, (though this may prove subject to correction), but excavators continually speak of the "large" bones found in the earliest types of mounds.

The later mounds, such as the bee-hives and stone cist burial mound type, are unquestionably those of tribes now classed as Indians and never show these tall types. That these stone grave-mounds are modern, is sure. Indeed, in one mound in Alexander County, Illinois, Roman Catholic copper medals have been found, probably given to Kaskaskia Indians by Father Gravier, who went down the Mississippi in the year 1700.

There are mounds, then, which were still a-building when the white men came. There are mounds which represent forts in a warfare that was raging before the white men came. There are mounds which point to a worship so old that no trace of it remains, unless it be in some way allied to the worship of Central America. There are mounds in which the only relics found are of crude pieces of chipped flint. There are mounds upon which several successive forests have grown. Finally

there are mounds, allied to shell-heaps on the British Columbian Coast, which lie flatly and distinctly upon glacial gravel.

The common-sense history of the Mound-Builders has not yet been worked out. It was hindered, in early years, by the existence of a powerful body of archeologists who were bent on proving that the Mound-Builders consisted of a great uniform civilization which dominated North America thousands of years ago, and which was overswept by the marauding Indians. This has been proved untrue. It has been hindered, latterly, by a school of archeologists who insist that there is nothing in the mounds which is not modern and who endeavor to connect every mound with the particular tribe which was dwelling in that region when the white men came. This also has been proved untrue.

There is yet to be developed a careful sequence of the groups of Mound-Builders. Undoubtedly many of them were contemporaneous. Undoubtedly many of them overlapped. Undoubtedly there was interchange of ideas between them, occasionally, leading to a change of customs. But that between the Great Fraser Midden and the mounds built in historic times a long period elapsed, is not to be denied. It may have been only fifteen hundred years, it may have been five thousand years. It is not likely to have been more.

There is yet another factor bearing on the

Mound-Builders which has been overlooked. This is the language relation between the tribes inhabiting the Mound Districts, and the customs of the Mound-Builders. Language is always an important matter in dealing with the antiquity and relationship of races.

In the final language map of the United States Bureau of Ethnology, it is shown not only that the language stocks of this country are very numerous and very different, but that they are very old. Most of the tribes were sedentary, or living in fixed homes when the Whites came, and most of them must have been sedentary for a long time before. The language stocks of America are not scattered over the map, here and there, as would be true if the tribes had been primarily nomadic or wanderers, but, rather, they remain in certain large and definite blocks. Indeed, with the exception of three or four tribes who followed the buffalo, the Indians before historic times were undoubtedly groups of people living within well-marked hunting, fishing or agricultural areas.

The language situation reveals, almost without question, that the greater part of these peoples had little or no relation with each other. It also shows that a great development of these languages occurred on this continent. It also shows, as a whole, that the oldest or more archaic forms of speech are found most generally on the Pacific coast.

Where the most ancient mounds are found,

archaic language traces remain; where the language has become highly developed and modernized, the mounds are of the most recent pattern. Yet both subjects are obscure, and neither the archeologist nor the philologist is prepared to set forth the historical sequences either of the mounds or of languages.

It is unhistorical to state that the Mound-Builders were a race preceding the North American Indians. It is equally unhistorical to say that the Mound-Builders were Indians. Rather should it be said that of the many Asian stocks which contributed to make up that complex group of peoples known as the American Indians, there were some stocks which were Mound-Builders. Of these mound-building stocks, some migrated, some died out, some were absorbed by other stocks, and some developed into tribes which are classified among the Indians.

There is, as it chances, an excellent illustration to be given from a similar development in England. The great dolmens and stone-works, such as Stonehenge—are these to be regarded as the work of the English? Were the English upholders of the Druid religion? It depends on what is meant by the word “English.” If it is taken to mean anyone who lives in England, then, yes. If it is intended to mean the English race, then, no. Stonehenge was built by a Celtic race, the British. This race was overborne and absorbed by successive layers of Teuton races—the Angles, the

Saxons, the Danes and the Norsemen—with a different civilization, a different language, a different religion, and different social systems. Stonehenge is Celtic and British, it is not Teuton and English.

In the same manner, unless the word "Indian" be taken to mean everyone who belongs to the Mongoloid stock and who was on this continent when the white men came, the early Mound-Builders were not Indians. They bear much the same relation to the Indians that the British builders of Stonehenge bear to the English, in some parts still dominant, in some parts submerged.

Historically, the builders of the mounds—whether they be called Mound-Builders or Indians—are the second group of Americans, and lead down from the Prehistoric Man of the glacial gravels to historic times. The early history of the United States is ineradicably bound up with those strange monuments—as mysterious and remarkable as are to be found in any of the countries of the world—which span the continent from the Pacific coast to the Atlantic shore.

CHAPTER VII

THE CLIFF-DWELLERS

UNDER burning skies, which seldom give down a drop of rain; through painted deserts of strange yellows, dull reds and whites, seen through a purple haze; amid sun-baked mesas and cañons of grotesque form, are found the strange and fantastic ruins of a Forgotten America.

Oldest of all these works of hoary antiquity are the great canals and irrigation ditches of Arizona and New Mexico, works done by peoples who lived tens of centuries ago.

Just as the shell-heaps of British Columbia form a prior step to the culture of the Mound-Builders, so do these irrigation works lead up to the culture of the Cliff-Dwellers. The exact date of their construction is not known. Certain tokens there are, however, which bring the cliff culture of the southwest clearly into the protohistoric period.

Central American historic civilization dates back to 176 A. D. By 500 A. D. the irrigation systems of that civilization had revealed a high degree of engineering skill. Irrigation systems of the north were earlier and more primitive. Three

stages have been discerned: Gila Valley, Kinkli-zhin and Kimmineola; prehistoric reservoir types, and, possibly, the buried Rio Verde ditches.

Some of these may have been contemporaneous, but it is more probable that they represent steps in the development of irrigation. It would be a very modest estimate to ascribe a thousand years before the establishment of the Maya Empire as the age of the rudest of the prehistoric irrigation works. This would make them older than the civilization of Ancient Rome.

If this date of 500 B. C. be established, it would put these ruins of the southwest in parallel with the early mounds of the Mound-Builders, and would thus afford a harmonious chronology in American prehistory. Great care must be taken not to make the facts fit the chronology, but to base the chronology upon the facts. As a working basis, however, it is conservative to say that the earliest cultures of the Southwest antedated the coming of Columbus by two thousand years.

Stories, which reappear from time to time, telling of ancient irrigating ditches which have been covered by a flow of lava not less than five thousand years old, must be regarded as unproved. One of the foremost authorities on Arizona ruins makes the terse statement that every time he heard of a ruin that had been covered by lava he had visited it—but he had never found the lava. Yet it is not to be denied that there are rock-cuts of extreme antiquity in these regions.

In the Rio Verde Valley, the prehistoric peoples constructed a complete system of irrigating ditches. The main canal of this ancient system shows clearly that the river was not only at a different level from the present when the prehistoric irrigationists did their work, but, also, that it followed another course. The bed of the ditch has been filled up by the deposit of the present alluvial soil which covers the region. The curves of the canal show that it was built on sloping ground, whereas the ground now is quite level. Furthermore, immediately under the ancient ditch, excavators have uncovered a stratum of hard adobe-like earth, quite different from the sand above it.

The Salt River irrigation ditches of early times extended over a total distance—with all their branchings—of 150 miles. The Salado were not much smaller. The Chaco irrigation works, of a high degree of skill, comprise 50 miles of ditch. Many small ones have been traced. It certainly would not be extreme to state that in Arizona and New Mexico, alone, there may still be discerned a thousand miles of irrigation ditches which were made before the coming of Columbus. Of these, one-third or more antedate the establishment of the Maya Empire.

Nor are these works to be pictured as mere ditches dug in soft earth. Far from it. As the soil of those localities is excessively loose and porous, it would have been vain merely to dig

a trench and to turn the river into it. The water would have leaked away at once. In order to prevent this seepage, the prehistoric canal-builders cemented the bottoms of their reservoirs and lined the sides of their canal with an adobe clay. Much of this lining remains in place, despite the one or two thousand years that have elapsed.

Irrigation works, moreover, imply agriculture. There is no need to dig canals and ditches to water fields unless those fields are cultivated. Cultivation reveals civilization to a greater or lesser degree, and, moreover, a sedentary life and an increase of population. There are always enough small fertile spots of ground in a river valley to permit of garden patches large enough to support a family. Irrigation works are proof positive that a large area was to be cultivated, and, this, again, shows a stationary population of considerable size, in short, a village or a town. Large groups of people invariably possess a system of government. Thus the builders of the irrigation systems of the Southwest appear on the pages of American History as being already in an organized social state.

Even more important than the irrigation works of the Cliff-Dwellers are their buildings. These vary from mere pits in the ground or holes cut in a cliff-side to enormous edifices of five and six hundred rooms. In antiquity they range from heaps of dust whose former outlines are barely traceable under the accumulated débris of cen-

turies, to palaces standing lonely on the desert, or to the great communal houses still in use by pueblo-dwelling Indians.

Six entirely different types of structure have been found in the Cliff-Dweller area. These are the Basket-Maker pit, the slab-house half-pit, the cave-dwelling or swallows'-nest, the cliff-dwelling, the tower and castle, and the pueblo. Each of these types differs from the other, but, in the whole series, a sequence can be traced.

Practically all the ruins of these characters are found in Arizona, New Mexico, and the north-western part of Mexico. It is important to note that none are found in Texas, nor in Eastern Mexico. Absence of such ruins to the eastward implies that Texas and Oklahoma lay as a barrier between the land of the Cliff-Dwellers and that of the Mound-Builders. In this intermediate area, neither mounds nor pueblos are found. This is a serious hindrance to the theory that the Aztecs were derived from the Mound-Builders, or the Mound-Builders from the Aztecs.

The cave-dwellings, cavates or swallows'-nests, are but holes cut into the face of cliffs. The greater number of them are found on the west side of the Rio Grande, between Santa Clara and Cochiti, and in the San Juan Valley, above the mouth of the Rio Mancos.

The rock in which these swallows'-nests were excavated is moderately soft. The digging was

done by scraping deep grooves with a stone tool and breaking out the part between.

The openings are square. The rooms within are irregularly round, usually about twelve feet in diameter and just high enough to allow an adult to stand upright.

Often, a second room was excavated, either behind the first and reached by a hole only large enough to permit the occupant to crawl through, or else parallel to the cliff-face, in which latter case a small hole was cut through to serve for a window. In a few cases, a connected third room has been found.

These holes in the rock, for they were little else, were reached by long ladders. They were almost impregnable. They were dry and protected from all weathers. Small holes in the walls acted as sockets for poles on which stores were placed. In most of them, the blackened roofs and walls show that cooking was occasionally done inside these hermit-like abodes.

In character, these cavates or caves show a close relation to the pueblo of the modern Indians. In the Cañon de los Frijoles, for example, the cave type is combined both with the cliff-dwelling and the pueblo type. Thus, up the cañon, there is a small cliff-cave, two hundred feet from the ground, in which cavates have been excavated and on the outer edge of which, undoubtedly, a wall was built. It possessed, just at the edge of the cliff, a circular pit, lined with a wall and projecting three

feet above the ground, forming a characteristic kiva or temple-cell. This remains intact. In the same cañon, moreover, there are the remains of a small pueblo formation at the base of the cliff, and, further down the cañon, the ruins of a large communal house.

One of the difficulties of assigning any definite date to these swallows'-nests is that the pueblo-dwellers of later times, when suffering under the periodic invasions of marauding hunting tribes, often fled to these cave dwellings. Another difficulty is that, in later times, some of these centers held a religious attraction and were visited as shrines. A yet further difficulty is that, in recent times, some of these caves were used as granaries. Remains found in such places, as a result of these varied occupancies, often are confused and confusing.

The finer types of cliff-dwellings are found at their best in such places as Navaho Cañon. One such is over 300 feet long. Under a sheltering rock, there still stands the ruins of a building, which, originally, was five stories in height. It was built in terraced form, the two lower tiers having been built outside the limits of the cave arch and lower than the platform of the cave. The masonry was of good workmanship, the stones being carefully laid in plaster, and the whole plastered outside.

In this cañon, alone, there are 106 such cliff-dwellings, each of which contained from 30 to 100

rooms. This represents homes sufficient for a population of 5,000 people or more, supposing that all these cliff-dwellings were occupied at the same time. This is a natural supposition, since the labor involved in the building of them is so great that empty dwellings would naturally be reoccupied. Over a thousand cliff-dwellings of this kind have been discovered, and there are many cañons which have not yet been explored. It would be a very moderate estimate to say that these dwellings, taken together, would accommodate a population of 25,000 people, had they been all occupied together.

This number, in itself, is greater than either the hunting or agricultural resources of the region would allow, and, therefore, one is driven to the conclusion that these various cliff-dwellings represent different stages in the development of these peoples. Some of the cliff-dwellings are more advanced architecturally than others. In one, especially, the Cliff Palace, there is the extraordinarily interesting fact that the great 100-room dwelling possesses, to one side and a little isolated from it, three small rooms, one two-cell group built roughly of flat slabs of stone laid without plaster, the other, a single cell, of unhewn blocks. Between these two architectural types, both in the same cliff cave, centuries may have elapsed.

Many of these cliff-dwellings, moreover, not only possess the dwellings built under the shelter of the cave, and the cavates excavated into the

cliff, but also structures erected outside the arch. In a number of cases, these exterior structures are protected by round towers. Some of these were built upon the temple-cells, known as kivas or estufas, but most of them are not. Their great historical importance is that they form a link to the extraordinary towers and castles of that ancient time, such as those built upon the heights above the Colorado River and which, at a distance, bear so startling a resemblance to the old castles of Europe.

There are some scores of these great towers and castles, and they find their best examples in the Hovenweep District, Utah. In general, the stones of which these were built were artificially dressed and still show the markings of the stone hammers. They were laid in adobe mortar. The rooms, within, were plastered. Holes were left near the tops of the wall through which beams were thrust and on which the roof was built. Sometimes, but less often, the same process was used for the making of a wooden floor.

These towers and castles are divided into five stages of antiquity. The earliest are the simple towers of round, semicircular or rectangular ground plan, without annexed rooms; the second type has annexed rectangular rooms; the third type is concentric, with radiating partitions forming separate rooms; the fourth type is circular, inclosed by rectangular rooms, and the highest is that of towers united to pueblos of pure type.

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Such buildings as Hovenweep Castle, Twin Towers, Stronghold House, and the like, are not only picturesque relics of the past but also imposing evidences of the architectural powers of the early peoples of the Southwest. Arizona and New Mexico can boast of an Ancient History not less amazing and not less mysterious than that of the Mississippi Valley.

More modern in character, but still of a period prior to historic times, are the primitive pueblo types which are found in direct connection with the cliff-dwellings. These are scattered over a large portion of New Mexico, Arizona, southwestern Colorado and southern Utah. Most of these were of the communal type, and enabled a community life of larger groups than was possible in the cliff-dwellings. The latter, of course, were limited by the space of the cave, though, as has been shown, some of these had been extended by structures outside the arch.

When the communal houses commenced to be built in the floor of the cañons, however, much larger structures could be made. Several enormous houses of this kind still stand in the Chaco Cañon. The Pueblo Bonita, in this cañon, had 640 rooms, the Pueblo Chottro Kettle, 506 rooms, and the Pueblo Hungo Pavie, 195 rooms.

All these pueblo types had the kiva or estufa, also found associated with cliff-dwellings and caves. Whereas, in the earlier period, these kivas seem to have been used only as temple cells or

sacred chambers, with the increase of the communal life they became also the schools and the club-houses, each gens or society of the tribe having the exclusive use of a kiva. Small groups had but one kiva and each gens had its day of occupancy. These were entered always through a hole in the roof. Such kivas are an essential part of the life of the pueblo peoples to this day.

Differing in this all-important fact—that they do not possess the kivas—were the Casas Grandes, or Great Houses, which were scattered throughout Arizona and Northern Mexico. They differed from the cliff-dwellings, also, in the manner of building. Some were of adobe-wall construction, but most of them were built of enormous bricks made of mud mixed with coarse gravel, and formed in baskets or boxes. The walls, in some cases, were as thick as five feet through. The individual rooms were loftier than those of the early pueblo or cliff-dwelling types, and, while few of these Casas Grandes were of more than four stories, their general height was greater. They were not laid out with the same regularity as the northern communal houses. The largest of these Casas Grandes are to be taken, not as palaces, but as villages, and, despite their apparent isolation, they may at one time have housed as many as 3,000 or even 4,000 people to a village.

Still further south come the famous ruins of Quemada, six miles north of Villa Nueva, in Mexico. Recent scientific examination of these great

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ruins points to their relationship with the cliff-dweller culture to the north as well as with the richer Central American culture to the south. The Spaniards described Quemada as "a great city in ruins, and abandoned; but it was known to have had most sumptuous edifices, with grand streets and plazas well arranged, and, within a quarter of a league, four towers, with causeways of stone leading from one to another."

The ruins are on a low ridge, from which rise three peaked hills, almost mountains. The whole group included, evidently, a pyramid, a temple, several Great Houses, smaller pueblos, single dwellings, fortifications and paved avenues, some of which may have been covered.

The outlying southern portion, from which side Quemada is usually approached, included a low stone pyramid, built upon a large and paved terrace, a broad elevated avenue paved with well-fitting stone slabs, and a row of small houses running outward and leading to a rambling group of pueblo-like dwellings.

Between the first and second hills was the temple of Quemada, which had many distinctive features. Of these the most unusual were eleven cylindrical pillars, built of small flat stones laid in mortar. The walls were 10 feet high and 5 to 8 feet in thickness. The temple was nearly square. It opened on a stone-paved courtyard.

The pyramid stood in a large square, quite isolated. It was connected with the temple by a

paved avenue. It was built of stone and still stands 35 feet high on a stone terrace which is itself from 6 to 12 feet high. It is perfectly square, 53 feet long, and points with but a slight error to the four quarters of the compass. In line with the pyramid is an altar cave, the walls of which are blackened with smoke.

On the second hill were three artificial stone-built terraces, all now in ruins. On each was built a communal dwelling. The walls of these were thick and also built of stone. Probably they were only two stories in height, but they may have had three tiers. The mode of building resembles that of the masonry of Arizona stone-built walls, and—most important—there is a kiva. These terraces, built of selected flat stones, represent an incredible amount of labor.

Between the second and third hills was another large square structure, now too much ruined to determine its character. It also was surrounded by a stone terrace. Thence ran another paved avenue, with two smaller structures to right and left. These, now, are but heaps of *débris*.

The third hill, also marked with many ruins, is still surrounded by a stone wall, 10 feet broad and 10 feet high. Apparently this is part of a similar wall which once encircled the three hills. "Wherever the walls or fortifications end, the mountain presents either steep or totally inaccessible sides, or the bulwarks of the stone-built terraces. Altogether there rises before the visitor

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an imposing, massive, walled fortress of stone, not unlike some of the feudal strongholds of medieval Europe."

Besides the main paved avenues within the inclosure itself, graded and terraced roads can be faintly traced for some distance from Quemada. The extent of the ruins and slow construction necessitated by primitive stone tools suggests a powerful population.

The fact that the wall is utterly indistinguishable on the first hill, appears only in places on the second, and is in comparatively good condition of the third, suggests that the fortress of Quemada was built in three periods. Probably it was first a temple inclosure amid open fields at a time when raids from the north were not feared. Then, possibly, the second hill became the site for a village around the temple. Later, as marauders came down from the north, a garrison was established and Quemada became a military stronghold.

Herein is seen a sequence of structures. From the mere swallows'-nest caves it passes to the rough types of unhewn stone that lie to one side in the cave of the Cliff Palace; thence to the cliff-dwelling; thence to the horse-shoe pueblo associated with a cliff-dwelling; thence to the combined cliff-dwelling pueblo and tower; thence to the tower and castle, and thence to the divergent types of the Casas Grandes and the pueblos. Quemada, in all probability, represents a mingling of

the cultures from the north and from the south.

But whence came the swallows'-nest peoples? Were they, indeed, a thoroughly primitive type? The evidence seems to point to the contrary. Even in the oldest caves, those which do not appear to have been reoccupied at later periods, pottery has been found. Although this is pottery of that early pattern which is known as the coiled-basket type, pottery is an art of comparatively late date.

It is to Arizona and New Mexico that one must turn for the origin of coiled-basket pottery. If it can be found that the oldest pottery suggests an earlier art, and if a stage of culture can be found which possesses this early art but does not possess pottery, then a sequence appears which may be of help in determining origins. Such a sequence has been suggested by modern archeologists in northeastern Arizona, where three culture-stages have been traced. These are the Cliff-House culture, the Slab-House culture, and, oldest of the three, the Basket-Maker culture.

The Cliff-House culture of the Kayenta (Ariz.) region is characterized by stone houses built above ground, kivas, and pottery of an advanced type. The Slab-House culture shows a system of building wherein slabs of stone are imbedded on end and the wall carried up a few feet by moistened chunks of clay, the floor being dug down for some few feet; the pottery found is coarser and more primitive. The Basket-Maker culture

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shows subterranean round houses, without any walls, pottery is scant and all of it made on a basket foundation.

The earliest stage in this Cliff-Dweller series, then, seems to have been that of the Basket-Maker tribes. Of this culture, the remains so far found betoken a primitive people. The Basket-Makers lived in round pits, with a brushwood roof over their heads. The Slab-House dwellers lived semi-subterraneously, a brushwood roof resting on a low wall. The Cliff-House dwellers lived above ground, but also made their roof of piles and brushwood, which, however, they covered with clay. Yet, though they lived above ground, they dug, also, the round pits of the Basket-Makers, and, remembering that these had the sanction of tradition, used them as sacred chambers, or, at least, retained them for ceremonial purposes. In some cliff-dwellings, the kiva was built in Slab-House style.

Among the remains of the Basket-Maker peoples, discoveries show the junction of two conflicting cultures. Both grains of corn and sea-shells have been found. The corn is a sure sign of communication with the south, for corn came from the south only. The shells, especially abalone, are an equally positive sign of communication with the north and west, for the abalone comes from California. The Basket-Maker culture, then, marks that all-important point when a northern primi-

tive culture and a southern primitive culture first touched hands.

As for the exact age and sequence of this progression from ancient basket-maker, through cave and cliff-dwelling to pueblo, there is no sure clue. Like the Ute and the Piute, who were their neighbors but not their kin, the Basket-Makers may have lived in the most primitive fashion, constructing nothing but pits and shelters of brush-wood, and living on what they could find. When the white men came they found some of the tribes in this region (Yuman, probably) at the very lowest ebb of human culture.

"Those," remarks Bancroft, "who have seen them, unanimously agree that they, of all men, are lowest. Lying in a state of semi-torpor in holes in the ground during the winter, and in spring crawling forth and eating grass on their hands and knees until able to regain their feet; having no clothes, scarcely any cooked food, living in the utmost squalor and filth, there is surely room for no missing link between them and the brutes."

This description is overdone, at least so far as the Basket-Makers are concerned. They did possess stone mortars for pounding wild seed, they did have knives of chipped obsidian, and they did understand the making of matting, by plaiting rushes together roughly.

A later period of this type of culture was shown from excavations in burial places near San Luis Obispo, Cal., where pestles and mortars of sand-

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stone and magnesian mica were found. An urn burial, near Santa Barbara, yielded beads of stone and shell, chipped implements of agate and jasper and well-shaped vessels of soapstone. Shreds of a finely worked yucca matting also were found. Wild seeds were found, but no corn.

With the latest Basket-Maker culture, there is a great change, resulting, apparently, from the introduction of corn. Only one form of corn, a small-grained variety, was found. Acorns and piñon nuts were numerous. Pieces of deerskin and mountain sheep hide, as well as fragments of bird skin and feathers, show that the later Basket-Makers did some hunting. Most significant of all, no turkey droppings were found in Basket-Maker deposits, revealing that, at this period, the turkey was not yet domesticated.

For clothing, the Basket-Makers used furs and tanned skins, and the women wore a string skirt, made of shredded plant fiber. As each fiber was but a thirty-second part of an inch in diameter, they were twisted in bundles of about 300, making a total of 5,400 feet of string for each girdle. As this had to be gathered in the stalk, sorted, cleaned, combed and twisted, it is seen how much labor was put into such a garment, which was, moreover, only twelve inches long.

Footwear was of immense importance, probably because of the heat of the sand and the small cactus spines with which the desert sands



Courtesy of The American Museum of Natural History.

RUINS OF A CLIFF HOUSE, GILA RIVER, ARIZONA.

This photograph gives a clear idea of the almost inaccessible location of cliff-dwellings.



Courtesy of The American Museum of Natural History.

THE PUEBLO OF WALPI.

This type of settlement is more modern in character than the cliff-dwellings, and this example perched upon a rocky bluff is intermediate in character between the cliff-dwelling and the larger Pueblo houses of the canon floors.



Underwood and Underwood.

A CLIFF-DWELLING AT FLAGSTAFF, ARIZONA.

Here may be seen the ruined walls built from the ledge below to the ledge above, forming the outer wall of the dwelling. The floor and roof and back wall were of the natural rock, and in some cases the lower ledge extended far enough in front to form a small balcony overlooking the valley of the canon.



Underwood and Underwood.

THE INHABITED PUEBLO OF WALPI. A MODERN TYPE OF ROCK-DWELLING.

This small and primitive village of today probably pictures very accurately the appearance of the older inhabited buildings of a similar character. Life went on then much more as it is today than we probably realize, and many of the older cliff-dwellings, Pueblos and other communal houses would have seemed to an observer very like Walpi in their general effect.



RESTORATION OF A PART OF AN ANCIENT CAVE TOWN ON THE RIO DE CHELLY, ARIZONA.

This model in the American Museum of Natural History shows the walls of the cliff-dwellings carefully restored.



**A WATCH TOWER
OVERLOOKING
NAVAHO CANON.**

Courtesy of The American Museum of Natural History.

are full. These sandals were made of yucca leaf weaving, of cedar bark, of string, and of hide.

The earliest Cliff-House culture shows several advances. The most significant of these is the presence of many different kinds of corn, pottery of advanced type, an improved type of sandal, feather-blankets, cotton cloth and whorls for spinning. Almost always there is a thick deposit of turkey droppings in an inclosure, showing domestication. A much greater variety of bones is found, and, with it, the remains of bows and arrows. On the other hand, objects of shell are fewer, showing the greater increase in the amount of culture arriving from the south.

Thus, while the information is not sufficient to establish an absolute record, all the evidence seems to point to the fact that the Basket-Maker culture came from the north, meeting the southern culture in the southwest plateau country; that by the time the Slab-House period was reached, the architectural ideas of the south had begun to penetrate and that, by the time Cliff-Dwellings were general, southern culture in food and in spinning had been established.

There is, however, not a single sign of the types of Maya hieroglyphs and decoration. There is nothing of Oaxacan geometrical design. The arrival of southern culture must have antedated all this development in Central America. The pictographs from the Kayenta neighborhood seem to have passed through two stages: painted forms

by the Basket-Makers, and incised or cut-in designs by the Cliff-Dwellers.

The most characteristic feature of all these pictographs is a "hump-backed flute-player," a human figure holding a long stick to his mouth, and with a large hump on the back. This form, the significance of which is unknown, is found all over this region, and nowhere else. None of the figures are of the hourglass type typical of the Navaho.

Historically, there is still one further step to be taken. Whence came the Basket-Makers? The obscurity of antiquity is too great for a positive answer, but, little by little, the research of highly specialized anthropologists, archeologists and ethnologists is beginning to provide a clue.

First, then, the Basket-Makers show little relation to the Haida civilization of the north. Totemism, which was the main characteristic of the northern peoples, does not appear in analogous form among the Basket-Makers. Burial customs are entirely different. There is no sign of ceremonial boats, nor does the mythology of the tribes descended from those peoples refer to fish.

On the other hand, there is a good deal of evidence that these people used the vigesimal system of counting (numbering by twenties) which is one of the most striking features of all the Central American civilizations. This vigesimal question is one of the most important in the early history of America.

It appears to have originated—or at least it was used—by the tribes of northeastern Asia, with inland dwellers such as the Tchukchi and coast dwellers such as the Ainu. Since, in early times the Tchukchi reached the shores of the Arctic Ocean and the Ainu occupied the whole of Japan, this represents a wide stretch of coast line. Among the Tlingit—who are related to the Haida—there is evidence of a vigesimal system, which appears to have been taken over by the Eskimo, but not to have been original with them.

Many authorities on Indian tribal migration suggest that groups such as the Dene and the Salish modified into divergent tribes on the high plains between the Rocky Mountains and the Great Lakes, and that it was from this plateau that tribal populations diverged. Some of these tribes went to the southeastward, into the region which is associated with Mound-Builders' culture. Some struck westward to the sea, by whatever mountain passes they could scale. Some went to the south, where, striking the inhospitable desert, they again turned westward to take their place among the tribes of the Southwest.

Among these tribes, while some of them later adopted the decimal system, all show evidence of an earlier system of counting by twenties. On the other hand, among the tribes of the great Shoshonean family to the eastward, and who were later occupants of the region, not a single one of the tribes used the vigesimal system.

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Thus, in Basket-Maker times, there was close association between the tribes of that culture and the California coast tribes; in the Cliff-Dweller period, the principal culture impact was from the Central American group; in Pueblo times, the influence of the tribes to the eastward had affected their culture.

The origin of the Cliff-Dwellers, like that of the Mound-Builders, points to an immigration over the land-bridge in the far, far north. Thence came a stock which settled for a time on the fertile land left by the last glacial drift, and which hunted in the game-filled wilderness of the Rockies. Mountain sheep, less shy and rare in those days, were their principal food. Some tribes, diverging from this stock, crossed the mountains by such passes as they could find, encountering coast tribes of lower culture along the shore.

The main band continued south along the mountains and reached the desert area, where some groups turned to the westward, while others sought the few cañons and valleys where a flowing river gave fertility. Southward and ever southward they pressed, until they came to the sphere of influence of a tribal stock which was surging north, and which was more powerful than themselves. There they stopped. Yet, though far from the game-filled wilderness, their pictographs point to their northern home.

This migration was not a trek. It was, rather,

a slow, onward movement with century-long halts. When, at last, these peoples reached the Arizona plateau, warlike tribes were at their heels and a stronger people was before them. They found, too, peoples of other stock, tribes of a low culture, who were called Digger Indians when the white men came. These three conflicting culture factors can be traced in the various pueblo tribes of today.

As the Shell-Heaps of the Fraser and the Mounds of the Mississippi form one line of historical development from glacial times to historic times, so the Basket-Makers and the Cliff-Dwellers form another. Both were limited, however, and brought about their own decay.

When the Spaniards and the French first came to the continent of North America they found both the Cliff-Dweller and the Mound-Builder cultures still in use, but both were passing into a decline. Richer and greater cultures, worthy of being classed with the great civilizations of the ancient world, had appeared in Central and in South America. "The glory that was Greece and the grandeur that was Rome" are the proud boast of Europe, but America may equally uphold the majesty of the Mayas and the might of the Montezumas.

CHAPTER VIII

THE MARVELS OF THE MAYAS

THERE were giants in those days!

In some such fashion as this do the old writers on Mexican mysteries preface that most fascinating of all American history puzzles—the problem of the origin of the three linked civilizations of Central America, the Maya, the Itza and the Aztec.

It is historically impossible that a people able to erect buildings of dazzling splendor, pyramids of towering height, and palaces profusely decorated with sculpture and ornament, should arise suddenly from a mere horde of savages. When it is added that the builders of these great temples, pyramids and palaces were also keen astronomers, good engineers, and possessed both a written language and a complicated system of calculation, the mystery becomes all the greater.

The more complex is a civilization, the longer it must have taken to develop. The more conventional does a language and a culture become, the more surely is it ancient. The mistier are the legends which treat of its origin, the more readily can they be ascribed to antiquity. For this reason, it is well to grasp at any clue, no matter how

faint, which may aid in laying a foundation for the early history of these great American civilizations.

The first tradition of the forerunners of these civilizations is found in a legendary reference to the Quinames, or fabulous giants. These are described as a wild and savage people, eaters of raw food, knowing nothing of cultivation and guiltless of clothing. Possibly these early folk may have been kin to the giant Patagonians of South America, a race which did not become extinct until the latter half of the Nineteenth Century. Of the Quinames, nothing definitely historical is known but their name.

Not much less nebulous are the tales of the coming of the first agricultural peoples of this area, the Olmecs and the Xicalancas. Such traditions as are related of them are either so distorted as to yield no historical clue, or else are so vague that they might equally well be applied to modern tribes. Historically, the principal importance of the Olmecs and Xicalancas lies in the fact that all traditions declare them to have been cultivators of the ground, especially for the crop of maize or corn.

Corn was the great civilizer of Central America, and, later, of North America. It afforded a constant food-supply. It enabled the building of great centers of population. It stimulated the tilling of the ground and the digging of irrigation canals. It developed wealth. It provided labor.

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It was the basis for a type of internal commerce. It underlay religion. In short, corn was the dominant factor in all the Central American civilizations.

The original home of corn in Central America is believed to have been Guatemala. The earliest evidences of civilization in Central America are in the Guatemalan region. The most primitive dialects of that region show a kinship with the South American tongues. The balance of probability, then, suggests that the passage from the hunting stage to the agricultural stage—in other words, the first step towards civilization—was taken in the Guatemalan zone by a people cognate to some South American tribes. The names Olmecs and Xicalancas may represent two tribes or two groups, either of these people, or of a later immigrant stock which absorbed them.

How long was this ago? The only clue is that of the history of maize or corn, and this reveals an immense antiquity. Using conservative figures, the early Mississippi Valley Mounds cannot have been later than 500 A. D., and may have been centuries earlier; yet grains of corn, first cultivated in Guatemala cycles before, are found in them. And culture did not travel quickly in those days. The Basket-Maker culture is not likely to have been later than 200 A. D., and may have been centuries earlier, yet grains of cultivated corn are found in their ruins, also. The prehistoric irrigationists are not likely to have

been later than 500 B. C., yet irrigation holds no other purpose than to irrigate fields and what other crop was known to these early peoples but corn? Over two thousand five hundred years ago, at least, corn was cultivated in America on a large scale, showing a widely extended culture.

Allowing for the gradual development of a wild plant into a cultivated plant, then from the use of the same from family patches to communal farming areas, and thence to artificial irrigation, at least five centuries more must have elapsed. Figuring from the evidence of corn, alone, the earliest step towards civilization in the Central American area must have been at least as early as 1000 B. C.

To the Central American and Mexican civilizations, three areas can be assigned, like to each other and yet different, which, roughly, coincide with a historical sequence. These are the Maya area, the Quiche area, and the Aztec area. In point of time, the Mayas came first, though the Quiches ran contemporaneously with the later part of the New Empire. The Aztecs were considerably later, and, indeed, developed an entirely distinct civilization, largely built upon the ruins of its predecessor.

From the language point of view, the two great civilizations were far apart. The point of division was at the Isthmus of Tehuantepec, the Aztecs lying to the north and the Mayas to the east and south. There were, of course, islands of each

language in the sea of the other, such as the Maya-speaking Huastec on the coast of Central Mexico, and the Nahua or Aztec-speaking Pipils in Yucatan, but these were small in comparison. These language areas remain to the present day.

In each of these great areas of Yucatan and Central Mexico, great ruined cities lie buried and forgotten in the forests, crumbling pyramids are to be counted by scores, and buildings by hundreds. The 70,000 square miles of Maya territory are so dotted with ruins that the traveler is seldom out of sight of some mound, pyramid, or other massive structure. Every village and town in Yucatan is built from stones taken from these ruins. Man has vied with the forest in destroying these remains of a powerful civilization.

Eight of the ruined cities of the Maya district are of special historical importance. These are Copan and Quirigua, near the border of Honduras; Tikal, Piedras Negras and Palenque in the central Maya area, and Chichen Itza, Uxmal and Mayapan in the north of Yucatan. Such cities were the New York, Chicago and San Francisco of the two Maya civilizations of more than a thousand years ago.

Out in the dense humid jungle, far from any present human habitation but an Indian hut, rise these walls of stone, these pyramids, these sculptured monoliths, these façades covered with weird designs in bas-relief and paint; these palaces, these temples, even great courts where tlachtli—

the Nahua basketball game—was played. Huge carved faces leer suddenly at a traveler in these dense forests, and, amid the rank and rotting vegetation, one will stumble upon the stone flags of a paved highway, or will look down the cement-lined sides of an irrigation canal, now the abode of snakes.

The marvel and the mystery of these ruins deepens the more they are examined. No part of the world, neither Ancient Egypt nor Ancient Greece, has such a wealth of architectural pre-history. It is little short of criminal to begin American History with the first voyage of Columbus and to ignore the greatness and the magnificence of the Ancient Civilizations of America.

Those civilizations, too, are all-American. The people came from Asia, but the cultures did not. They developed here. The architecture, it would seem, arose as a gradual transition from carved wooden temples into forms of stone. In Piedras Negras the wooden door lintels still remain, and sockets in the stone walls show where wooden beams were thrust. In ancient Tikal, oldest of all Maya cities, modern explorers have found great wooden tablets (protected from the weather), the designs of which are identical with those which are found sculptured in stone in the later cities of Maya culture.

None of these earlier wooden structures have been found. In tropical Mexico, wood rots with amazing quickness, and wood-work gave place to

stone more than sixteen centuries ago. True, here and there in the land of the Mayas have been found traces of the same megalithic type of wall which appears in the early period in Peru, but the links therefrom to the Maya temple are missing. The theory of a transition from wood to stone is held by the most competent authorities.

One of the most characteristic of all features of Maya architecture and of the city-planning of Maya centers was the raising of all buildings on terraces or pyramids. Some of these sub-structures were enormous, hundreds of feet square. Others were high and very sharply pitched, like the pyramids on which are built the House of the Magician at Uxmal and the temple at Tikal. Others, again, were truncated mounds, and the small square surface at their tops was used as an open-air altar. Most of these brick-built foundations were faced with stone.

When viewed from a distance, the Maya cities must have presented a most imposing effect, these terraces and pyramids of rigid geometrical form, looming high above the gardens and half-cultivated fields of primitive agriculture. Most of them were in ruins when the Spaniards came, but even these aroused wonder and admiration. They arouse even more, now, when it is realized that such marvels were done with flint hammers and tools of stone.

The Maya temple was of strange architecture, like nothing else in the world. Labor and massive-

ness took the place of knowledge. Technically, the architectural ideas were primitive and crude. The Mayas did not know the principle of the key-stone arch. They did not bind the courses in their walls. They did not reënforce the corners of their buildings. Spans were unknown. The work was lumpish and heavy. Even the roof-combs were walls built on a roof merely to carry sculpture and decoration, and which give an appearance of grace to a few of the buildings, were of cumbersome build.

The walls of the temples, built very thick, were carried up vertically to the desired height, and then the mason commenced to build inwards, allowing successive courses to overlap until the inner sides met. This made a solid box-like structure, nearly all wall, with a narrow chamber within. The amount of masonry was almost unbelievable. Thousands of cubic feet of stone would be used to enclose a room twenty feet long and half as many wide. The side walls were thicker than the space between.

The Mayas ranked very high in art, far higher than in architecture. Their sculpture was superb, not in grace, but in freedom. The great façades of their buildings, erected in this wasteful method, left large space for decoration—and every inch was covered. Hundreds of thousands of square feet of hard stone were carved with the most intricate designs. Their pottery was very varied, and often painted in color before firing, though, as

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in their architecture, the fundamentals were primitive. Gold and copper were worked into ornaments.

Much of the sculpture was symbolic, dealing either with the gods or with the religious festivals which depended on the Calendar. This Calendar ranks among the great intellectual achievements of the world, and formed the basis of Maya life then, even as it forms the basis for Maya history now.

Complicated though it seems, it was no more complicated than a modern calendar, which has twelve months with a varying number of days in each month, in which the number of days in every fourth year (Leap Year) is larger than the other three, and in which the leap years themselves are subject to further irregularity. Calendars are compelled to be complicated. The earth revolves around the sun in a fraction under $365\frac{1}{4}$ days. The moon revolves around the earth in a fraction under $27\frac{1}{3}$ days. These fractions make all the trouble. Neither a regular solar or lunar year can form an annual working calendar.

The Maya Calendar was vigesimal, that is, it took twenty as a unit number. This count was probably a survival from a primitive counting of fingers and toes. It also had a lunar element, for the Maya astronomers had observed that there were thirteen lunar months (and a third over) in every solar year. Therefore their religious year,

compounded of these two units, was $20 \times 13 = 260$ days.

But the Mayas were an agricultural people, and the seasons depend on the solar year, not the lunar year. They found that their 20-day period occurred 18 times in a solar year. So the secular year of the Mayas was $20 \times 18 = 360$ days. Then, after a while, they found they were falling behind at the rate of five days a year and so they added "the five unlucky days" during which evil was supposed to have power and in which no work was done. They also had a year based on the movements of the planet Venus (584 days and a fraction), but there is no need to go into that additional complication.

In the secular year, then, the Mayas had a *kin* or day; a *uinal* or month of 20 days; a *tun* or year of 18 *uinals* or 360 days (the five unlucky days were considered as evil and not considered in long calculations); a *katun* or luster of 20 *tuns* or 7,200 days; a *cycle* or century of 20 *katuns* or 144,000 days; and a great cycle of 20 cycles or 2,880,000 days.

The Maya arithmetic, also, was vigesimal. A dot represented a unit and a bar represented five units. So, for example, three bars and two dots represented seventeen. The century figure of greatest importance was that of one bar and four dots, or 9. As each of the days, months, years, lusters and centuries had a glyph or sign, by putting these bar-and-dot numerals before such a

glyph, the Mayas were able to write the 9th century, the 16th luster, the 7th year, the 11th month and the 19th day, without difficulty.

The early Mayas, in addition to their architecture, their sculpture, their calendar and their arithmetic, had a complex and elaborate governmental system, of which the priests were the ruling factors. The religion was ornate and the symbols so exceedingly varied as to suggest a fully developed theology.

Corn and cacao were the most important crops, but beans, yams and other food-plants were grown. They were good hunters, had devised a number of mechanical traps for game, and, at certain seasons, had communal game-drives. Turkeys and geese were domesticated. Bees were kept. Canoes were used for fishing both on the lagoons and at sea. Their food, therefore, was rich and varied. They knew of several drinks, including chocolatl (whence the modern word, "chocolate").

Social life was well-organized, being a communal development of the tribal system. Labor could be commandeered by priests and nobles, who, in turn, were responsible for averting famine. Work on public edifices was voluntary. Slavery, as such, did not come into being until the end of the New Empire and Aztec times.

Nobles gave large banquets, each banquet imposing an obligation on each guest to return it with similar generosity. (This resembles the pot-



Courtesy of The American Museum of Natural History.

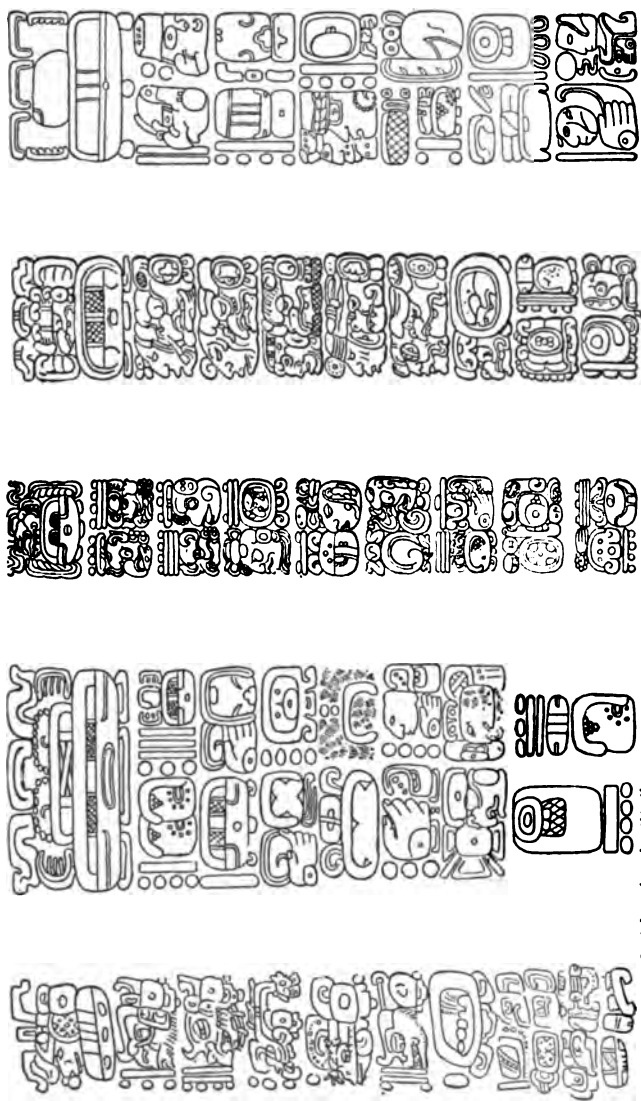
NORTHERN FACE OF THE TEMPLE OF CASTILLO, YUCATAN.



Courtesy of The American Museum of Natural History.

THE LEANING STELÆ OF QUIRIQUA.

Maya culture was not so much a developed civilization as a state of savagery or barbarism elevated to a height approaching civilization, and the amazement is not that they attained such heights, but that they achieved so much upon a basis which was essentially primitive.



Courtesy of Smithsonian Institution.

MAYA GLYPHS.

Column 1 (left) is from the Leyden Plate, one of the earliest inscriptions known, the date reading 8.14.3.1.12; Column 2 is from the Great Tortoise of Quirigua, showing the writing in its simplest form, reading 9.18.5.0.0; Column 3 is from Stela A, Copan, with simple bar and dot numerals but with head glyphs for periods, reading 9.14.19.8.0; Column 4 is from the Temple of the Sun, Palenque, a mythological date, showing head forms for numerals as well as for periods; Column 5 is from Chichen Itza and is one of the latest known, showing a mixture of forms and reading 10.2.9.1.9.

latch or gift feast of the British Columbia Indians.) Gifts were given at these banquets. The feasting was copious, and various cheering drinks flowed freely. Gambling with dice was common. Various forms of dance were given, also a type of theatrical entertainment. For music the Mayas had trumpets of several forms and tones, bone flutes, reed fifes, whistles, bells of different tones, rattles, cymbals, and drums and gongs of various notes.

The costumes, both of men and women, were elaborate, showing that the early Mayas had attained great proficiency in the textile arts. Woven garments, heavy with embroidery, are painted and sculptured on the monuments. Head-dresses were ornate. Sandals were worn, and, in a few examples, finely worked leggings are shown. Necklaces were universal.

Withal, barbarous customs prevailed. Among the nobles, the skull was deformed and flattened from childhood. An artificial squint was thought beautiful. The teeth were chipped into patterns and holes were made in the teeth which were filled with brightly colored enamel. Bars were worn in the nose, among some Maya tribes, and the ear-rings were made so heavy as to deform the ears.

Maya culture, then, was not so much a developed civilization as a state of savagery or barbarism elevated to a height approaching civilization. It betrays its isolation. It shows growth rather than

advance. In calculation, in writing, in life, the amazement is not that the Mayas attained such heights, but that they achieved so much upon a basis which was essentially primitive.

All these points are of the greatest value in considering the history of the Mayas. Before there can be a highly conventionalized writing, there must be simple signs; before there can be an elaborate and highly decorated dress, there must have been a knowledge of weaving and embroidery; before there can be buildings erected in good proportions, there must be crude structures; before religious festivals reach a high point of complication, there must have been a priestly clan which endured through centuries of power.

The early history of the Mayas can only be reconstructed from the development which is to be found in their several centers. Roughly made buildings must be compared with fine pieces of architecture; coarse workmanship must be compared with fine. It is not always easy to tell from such signs alone which is the oldest site, but certain definite characters stand out. Thus, from architecture and sculpture alone, it can be stated with a certain fair amount of definiteness that Tikal and Piedras Negras represent an early period, that Quirigua and Copan to the south are later, and that Uxmal and Chichen Itza to the north are later still.

Such a broad statement, however, is not entirely satisfactory. It leaves a historical gap. Even

granting that comparatively little exploration has been done, and that archeologists have naturally been attracted to the sites which show the most splendid ruins, none the less the sudden appearance of a developed Maya architecture appears as a stunning shock. One of two conclusions is imperative. Either the occupation of the Maya region by the Mayas extended over many centuries prior to the building of Tikal, or else the Mayas migrated into this territory from some other land, where they had already begun to develop the culture which they carried to such great heights in Guatemala and Southern Mexico.

Most important of all clues is that of the work found in the strata underlying the oldest temples. This is known as the Archaic Horizon. It is characterized mainly by small figures or figurines of men and women, modeled in clay and sometimes painted. The forms are peculiar, and, as Spinden points out, the technique is well standardized. Most of these figurines are modeled in a flat gingerbread fashion into a rough shape. Upon this shape special features are indicated by sticking on bits of clay and by gougings or incisions with a pointed stick. Modeling was done entirely by hand, molds being unknown.

The figurines are usually from two to five inches in height. Many of them represent women in sitting or standing positions, almost always with the hands upon the knees or hips. The heads are of slight depth compared with their height, the

limbs are short and come to a point. The body is always shown as plump. The hands and feet are mere knobs, with the fingers and toes marked by grooves made with the stick.

The methods of making the eyes are sufficiently conventional to show a sequence from the most primitive to the later. The oldest types are not found north of Mexico nor south of Peru. Most significant of all, these figurines appear in Colombia and Ecuador, but not in the Nahua country of Northern Mexico and Arizona. The characteristic features of Nahua life, such as the use of the bow-and-arrow, or the custom of decoration with feathers, are not represented in these figurines.

In the archaic stone sculptures, the similarities with South America and especially with the coastal region of Peru are almost absolute. Figurines found on the island of Marajo, near Pará, Brazil, have fundamental similarities to those from Venezuela and Central America. Likewise, figures dug up from early remains at Ancon, Peru, show clay modeling of exactly the same character as that of the oldest remains of Central America.

It is difficult to avoid the conclusion that peoples who made the objects found in the Archaic Horizon of Central America either had immigrated from South America or had encountered immigrants from South America, and it would be by no means extreme to place this at 2000 B. C.

So far as the Mayas are concerned, it cannot

be proved that they were the makers of the Archaic figurines. More probably, the Mayas came after, late enough to be subject to influence both from North and South America. Linguistically, the Mayas are of the same stock as the Huastecs of Central Mexico, yet there is not the slightest sign that the early Huastecs possessed any of the Maya civilization.

On the other hand, there are strong similarities between the customs of the Mayas and the Chibchas of Colombia, and between early Mayan architecture and that of the Chimú in Ecuador and Peru. Of these, the truncated pyramid and the so-called Mayan Arch are notable. Furthermore, the vigesimal system was widespread in South America.

Thus the fables, the archaic culture and the earliest buildings of the Mayas point to the south; the legends and language of the Mayas point to the north, especially through that indeterminate people—the Toltecs.

This word "Toltec," which means the people of Tollan, has been one of the principal causes of confusion in Central American History. The modern view of the best authorities is that the Toltecs were an early wandering offshoot of the Nahua stock (from which, afterward, came the Aztecs) who migrated southward and absorbed a primitive type of Maya culture. By those authorities who hold to a northern origin for the Maya, the Toltecs are regarded as a Maya off-

shoot. The Aztecs themselves accounted the Mayas to be Toltecs. The Mayas regarded the Toltecs as Nahua.

With the actual commencement of the Old Maya Empire, there comes an amazing historical change. Instead of vague hypotheses on what this may have been, or that, the historian is confronted with a wealth of material. At nearly all the Maya cities, pillars were erected on which were inscribed events and their dates, or else, mere dates. True, these were written in hieroglyphs which, until recently, no one could read. Even yet, many of them are unread, and there is discussion of those which have been deciphered. But a solid foundation has been laid. It was really not until the year 1920 that all the discoveries and decipherments of the preceding century were brought into harmony and a chronology of Maya history was made possible.

The monuments or stelæ which are found all through the Maya country consist of blocks of stone hewn into pillars (square or oblong) and generally about ten feet high. The earliest of these are sculptured on one side, and, according to Maya dating (to be explained later) the first date found is 8.14.10.13.15. The next advance was to stelæ with two alternate faced sculptures, the sides being left plain; the first of these is dated 9.2.10.0.0. The third class is that in which all four sides are covered with inscriptions, of which the first sure example is dated 9.4.10.0.0.

The fourth class is that in which a human figure appears sculptured on one face, the back and sides of the stone being covered with inscriptions; the first of these is dated 9.9.0.0.0. The fifth class consists of stelæ with human figures on front and back, the glyphs being at the sides, and the first of these bears the date 9.11.0.0.0. The sixth class laid so much emphasis on the human figures, dress and decoration, that one figure occupied the front and both sides, and all the glyphs were huddled on the back; the first of these being dated 9.15.5.0.0. Practically all these glyphs dealt with time and numbers.

The Maya priesthood conceived time more clearly than any other body of students the early world had ever known. It observed, recorded and calculated the apparent revolutions of the Sun, Moon and Venus, computed eclipses, and—most amazing of all—established accurate relations between solar, lunar and secular years. When it is remembered that Europe had not reached this point in the late Middle Ages, the superb mathematical powers of the Mayas must be deemed at least equal to the geometrical powers of the ancient Greeks. In fact, as soon as a single satisfactory date is found to link together the Maya Calendar and the Gregorian Calendar, every date in Maya history can be told to the very day.

The full understanding of the Maya inscriptions—of which just about one-half have been deciphered—will probably explain most of the

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chronological mysteries of all the early civilizations both of North and South America. Nor, indeed, has this triumph been too long delayed. Although open to correction, there has at last been put into the hands of Americans the clue to the early chronology of this continent.

Without going too closely into Maya Calendar calculation, one may explain, simply, the meaning of these monument dates. For example, what date do the figures 9.4.10.0.0. imply? They mean the century, luster, year, month and day, the Maya century being 144,000 days, the Maya luster (*katum*) being 7,200 days; the Maya year (*tun*) being 360 days; the Maya month (*uinal*) being 20 days, and the Maya day (*kin*) being the same as the present. All these are multiples of twenty, save that there were 18 instead of 20 months in the year. Thus the date given above would be the Ninth Century, Fourth Luster, Tenth Year, and the beginning of the first day of the first month.

The Maya Calendar assumed a distant astronomical date as the starting point, so that, with rare exceptions, all the dates of Maya chronology fall into the Ninth Century, or after. The historic date for the beginning of Maya History (as distinguished from mere chronology) is 9.0.0.0.0. and is traditionally the date at which their first great migration began. On the calculation of Morley this date corresponds to the year 176 A. D., of the Christian or Gregorian Calendar.

Yet this traditional date is by no means the first Maya inscription. The earliest actual date inscribed is found on the Tuxtla Statuette, a bird-like figure with a human head, carved out of hard jadeite. The figures hereon read 8.6.2.4.17., corresponding to the date 100 B. C. At this time, then, the Mayas had developed a calendar, a complete chronology and a system of hieroglyphic writing.

The second inscription was on the Leyden Plate, a small carved piece of nephrite, found near the mouth of the Motagua River. The date there recorded is 8.14.3.1.12. This is a little more than seven Maya years before the earliest inscription recorded on a stela. The oldest stela was found at Uaxactun, a ruin some 20 miles from Tikal and not discovered until the year 1916.

Stela 9 at Uaxactun is of enormous importance as the earliest Maya monolith so far found. It is a large limestone block, standing eleven feet out of the ground and weighing several tons. Not only does it reveal the high degree of Maya writing—though the glyphs are crude compared to later examples—but it shows great mechanical skill in the cutting and erecting of a block of such size. The date given is 8.14.10.13.15. or 77 A. D.

Copan, although a site to the south, being, indeed, just over the border of Honduras, possesses a monument which is second in age, having a stela with the date 9.2.10.0.0. The next two

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come from Tikal, near Uaxactun. Thirty other stelæ have been found at these three sites which are earlier in date than those found in any other Maya ruin. Tikal and Uaxactun in the central area, and Copan in the south, then, were the earliest Maya settlements, according to the evidence of the dated monuments. The end of the Old Maya Empire came in 10.2.0.0.0., which is the year 610 A. D.

The period between the Tuxtla Statuette and the first stela at Uaxactun, a space of 177 years, may be regarded as the protohistoric period, though further discoveries are likely to extend this. Maya History begins with the year 77 A. D. and goes on to 620 A. D., these five and a half centuries comprising what is known as the Old Empire.

The Old Empire is divided into three periods: the Early Period, 73-378; the Middle Period, 378-477; and the Great Period, 477-620.

Of the ruins so far found, only five centers seem to have been thoroughly organized during the Early Period. These were, in the order of their formation, Uaxactun-Tikal, Copan, Piedras Negras, Naranjo and Altar de Sacrificios-El Pabellion. Tikal, Copan and Piedras Negras were the capitals respectively of a northern, a southern, and a western province.

During the Middle Period the Maya occupation increased rapidly. Palenque, Yaxchilan, and Tzendales were founded in the west; Yaxha in the

north; Itsimte in the center, and Quirigua in the south. In all probability the great metropolis of Nakum was begun, though it had not then reached the great size it afterwards assumed. Moreover, it was during the Middle Period that Chichen Itza was discovered, opening a large fertile and uninhabited territory to the north.

In the Great Period, population increased, civilization advanced, and city after city sprang into being. Seibal was, perhaps, the first of the larger cities to be begun in this period, followed by La Honradez, El Cayo, Los Higos, Ixkun, La Mar, Cancuen, Aguas Calientes, Flores, Ucanal and Benque. The last three cities had but a short life, not more than thirty years or so, when the Old Maya Empire came to an end.

When it is asked what were the causes which brought the Old Maya Empire to a sudden end, one of the most interesting problems of history presents itself. Several theories have been advanced. Of these the most important are: that a huge epidemic devastated the country; that there was a change of climate which rendered agriculture difficult, and that the Maya system of agriculture was of a character which gradually consumed the fertility of the soil and brought impoverishment.

There seems no reason why all three of these theories should not have operated together. The Maya system of girdling and burning a patch of forest, planting seed-corn in the ashes and doing

no further cultivating, was wasteful in the extreme. The same clearing was never put to a second crop, at least not until several years had passed, when the second-growth forest was treated in the same way. This would, ere long, impoverish all the land in the vicinity of the city centers.

There seems little doubt, moreover, that a climatic change, with heavy rainfall, occurred toward the end of the Old Empire, and this, reducing the period of the dry season, would prevent the burning of the trees in time for the sowing and ripening of a crop before the wet season recurred. This, again, would develop a hot, steaming, humid climate, with pools and marshes which breed a particularly malignant malaria. In all probability, these three forces acted together to render life more and more difficult in the Old Empire, until, at last, it became impossible.

Several historic events support this conclusion. Thus Piedras Negras, one of the early cities, which was located in a small semicircular flat with hills on the one side and the river on the other, and had but little land for this rough method of cultivation, was the first city abandoned, the final date being about 536 A. D. Copan was abandoned five years later. Uaxactun in the north and Quirigua in the south were abandoned in 551, and Naranjo, in the midst of a fertile plain, ten years later. Benque Viejo, Ucanal and Nakun

lasted thirty years longer, and the last dates of the Old Empire, 10.2.0.0.0., show the closing years of Flores, Tikal and Seibal. Of these three Tikal is by far the most important and it may have been the capital of the Old Empire. Yet it, too, passed out of history in 620 A. D.

The Old Empire died gradually, as is seen by the fact that the abandonment of the several cities occurred over a period of almost a century. Yet it was so complete that the effect is one of appalling suddenness. This startling abandonment becomes all the more striking when it is realized that for several hundred years after these cities had been abandoned, the country was left absolutely desert, uninhabited. Even the indigenous tribes had disappeared. There is not a sign of occupation of those great cities for nearly a thousand years after the Fall of the Old Empire.

Yet the historian is not left without a clue as to what happened to these early Mayas. Their disappearance has been a dark and impenetrable mystery until the last few years, but modern exploration and research has traced the migrations of the Old Mayas to the north and to the south.

Uaxactun-Tikal was the first and greatest northern center, and, with one exception, all the population movements of the Old Maya Empire were southward. The one exception was La Honradez, which was still further north, in the direction of Lake Bakh'alal. The first stela is at La

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Honradez (doubtfully) 9.16.10.0.0., the first sure inscription is 9.17.0.0.0. If the earliest date be taken, which is equivalent to 502 A. D., then the first settlement of La Honradez, to the northward, was only 34 years before the abandonment of Piedras Negras, the first year of desolation for the Old Empire. Already, new homes were being sought.

It is sure, however, that before a city could be founded, with temples and all the elaborate hierarchical system of the Mayas, early exploration, and, probably, summer settlements would have been made. This, again, is proved by the documents. In various writings and traditions it is stated that colonists from the northern cities discovered Lake Bakhalal in 9.14.0.0.0. or 452 A. D., and stayed there until 9.17.0.0.0. or 511 A. D. "During this time," says the old record, "Chichen Itza was discovered." This latter city was a center more than 200 miles to the northward, in a fertile plain, free from some of the climatic difficulties which had overtaken the Old Empire.

During the decline of the Old Empire, then, colonizing settlements had pushed northward, had established La Honradez, had spent some time at Lake Bakhalal and had explored the territory where afterwards rose the great capital of Chichen Itza.

There was also an abandonment of the southern cities, such as Copan and Quirigua. These emigrants would not traverse the entire central

area of Maya culture, in order to follow a few of the northern colonists into the north. The evidence that they did not do so is that Copan was abandoned in 541 A. D. The overflow first went to Seibal, the first date of which is not until 9.16.0.0.0., or 492 A. D., and which was, without any question, the last of the central southern cities to be abandoned. During the century after the fall of Copan, then, southern colonists pushed to the south and to the southwestwards, seeking higher land.

This movement had already been witnessed in the foundation of Tzendales by colonists moving from the central portion of the Old Empire. It took an even more important advance in the founding of Quen Santo upon the Guatemala highlands by colonists, probably from Copan, Quirigua and Seibal.

The discovery of dated monuments at Quen Santo is a historical fact of capital importance. This site, which is only a hundred miles from Seibal, possesses a stela with the date 10.2.5.0.0., or 615 A. D. This is ten years later than the last stela of Seibal, while five years earlier than the final stela found among the cities of the Old Empire.

It was the Old Empire which was the golden Age of the Maya civilization, their Age of Sculpture, which is to be compared with the classic period of Greek Art. It is only latterly that Americans are beginning to realize that this con-

continent possessed sculptors worthy of being classed with Phidias and Praxiteles (in creative power, if not in art), and that their works are crumbling, almost unknown and uncared for, in the all-devouring jungles of Guatemala and Yucatan.

While the origin of these Americans was the other side of the Pacific, they owed little of their culture to an alien world. They came to a new world and gave birth to a new civilization. They built cities unlike any other that the globe has known. They possessed a religion utterly their own. They invented a Calendar which is to be classed as among the most wonderful efforts of the human brain. They devised an arithmetical system. They developed a form of writing so intricate that, although it was in daily use only a few hundred years ago, today no one can read it all. They made paper of maguey. They wrote and illustrated books which, for skill and strangeness, are without a parallel among the primitive races of the world.

Something they may have owed to earlier peoples whose footsteps are adumbrated in South America; something to northern peoples whose primitive cultures find forerunnings in North America. But their culture was neither Asian nor European nor African. America was its home and the Mayas left behind them the imperishable record of a glory which is the first among the golden pages of American History.

CHAPTER IX

THE ITZA AND QUICHE KINGDOMS

WITH the Fall of the Old Maya Empire and the depopulation of the great central area, an entire change came over Maya culture. It degenerated in some ways, advanced in others. The continuity was absolutely broken in the south (though further explorations in Honduras and Salvador may provide the missing links), but it was not so sharply cut off in the north. It is there, then, that History must turn.

Before the end of the Old Empire, La Honradez had been founded, a settlement had been made on the banks of Lake Baxhalal, and the site of Chichen Itza had been explored. The northern colonists carried with them their religion, their calendar, their system of writing, their architecture, and their pottery. But it was a period of poverty, of resettlement, and of hostility to the priests, who were blamed by the people because the gods had allowed the Fall of the Old Empire. That some of the priestly order remained is clear from the fact that the calendar did continue, but that it was seriously weakened is shown by the

scarcity and crudeness of inscriptions immediately after the Fall of the Empire.

The first settlement of Chichen Itza does not seem to have been successful. Though it was first occupied in 531 A. D. and though its earliest monumental date was 10.2.10.0.0., which is 620 A. D., it was abandoned in 669 A. D. The reason for this abandonment is unknown. Apparently the site does not seem to have pleased the priests, for in the text of the Chilam Balam of Mani (a late Maya record), a reference is made that "the holy men had their houses at Chanputun," better known as Chakanputun.

The text goes on to say, briefly, that thereupon the land of Chakanputun was seized, by a date which appears in modern chronology as 709 A. D. For two hundred and forty years the Xiu or Itzas (the northern Maya migrants) ruled in Chakanputun. Then, according to the Book of Chilam Balam of Chumayel, the city "perished by fire, which destroyed it quickly and consumed it." This fire, probably, demolished rather the frame and brushwood domestic dwellings than the temples and stone structures, but it seems to have been taken as an evidence of the anger of the gods and the Itzas departed. In two other of the Traditional Books there is a curious reference that "those of Itza were under the trees, under the branches, under the boughs, to their sorrow," implying that all the joy and comfort of the Maya life concentrated around the religious ceremonies,

and that, without their temples, they were houseless and homeless indeed. After twenty years of wandering in the wilderness, they returned to Chichen Itza, and, in 965 A. D., the second occupation of Chichen Itza began.

During the period of the occupation of Chakanputun, another emigrant branch established the city of Mayapan, west of Chichen Itza. Tradition declares it to have been first built by the god Kukulkan. As this is said to have occurred two centuries before the formation of the League of Mayapan, which occurred in 1004, the building of Mayapan would be about 804 A. D.

Thus, at the end of the Transition Period between the Old Empire and the New, it is possible to reconstruct a very brief history. Beginning with the end of the Old Empire in 620 A. D., Chichen Itza was abandoned in 669 A. D. The priests had already made a sacerdotal center at Chakanputun, and this was colonized and made an important center in 709 A. D. During the next century, in 804 A. D., another branch of the Maya Race built Mayapan. War arose, as the sculptures show. In 945 A. D., Chakanputun, which is believed to have been on an exposed site, near the sea, was abandoned. In 965 A. D., the second occupation of Chichen Itza began, and, in 1004, the League of Mayapan was founded.

This scanty history reveals a period of decline, and the archeological evidence supports this. Thus the Initial Series system of marking dates gave

place to a briefer and less exact system, the art of pottery declined, sculpture fell to a low ebb. Spinden regards this as an evidence that the Golden Age of the Old Empire had sapped the Maya strength, and that the Dark Ages of the Transition Period were a necessary preparation for the New Empire which was about to come.

The opening of the eleventh century witnessed important and far-reaching political changes in Yucatan. It saw the founding of the great city of Uxmal by the chief of the Xiu family or tribe, and the great League of Mayapan was formed. This was strictly a Confederacy, in which the rulers of Chichen Itza, Mayapan and Uxmal had equal rights. Since the tradition held that Mayapan had been built by the god Kukulcan, that city became the religious center. Chichen Itza, as the oldest city, had a special importance and power of its own. Uxmal shows both in its architecture and its alliances that it was colonized mainly from Chichen Itza, though owing religious precedence to Mayapan.

“Happy is the nation that has no history” is an old proverb, and it applies with singular truth to this League of Mayapan. For 200 years peace and prosperity reigned in Yucatan. Over thirty cities—the names are not important here—have been discovered as belonging to this time. Sculpture, as a separate art, languished, but as a decoration to architecture, it lived again. Never, in any country in the world, has such richness of

decoration been applied to building, yet without loss of beauty or dignity. It is estimated that the Northern Maya population of the Era of the League must have been little short of 200,000, for only a large population could have built such extensive works. It is to be remembered that, almost without exception, all the buildings are temples, and there is good evidence that nearly the entire land which is now under forest, was a semi-cultivated plain. In the Era of the League, the Mayas had learned irrigation and culture, and had abandoned many of the careless farming habits of the Old Empire.

Then jealousies arose. With two tribal families (Cocomes and Xiu) occupying rival posts of authority, it was difficult to avoid conflict. The cause appears to have been, originally, the eagerness of the ruler of Mayapan to make alliances with the non-Maya tribes to the west and north, tribes which belonged to the Nahua stock, and who were hereditary enemies. The gradual infiltration of this Nahua or Aztec culture appears first in Mayapan, and later in Chichen Itza. One of the most characteristic of these innovations was the building of a sacred ball-court for *tlachtli*, a game which was Nahuatl in its origin.

In the year 1201 the crash came. Chac Xib Chac, the Lord of Chichen Itza, uprose as the defender of the Mayas against the overlordship of Mayapan, declaring that Hunnac Ceel, the Lord of the rival city, was practically turning the

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Mayas into slavery by the aid of Nahuatl mercenaries. Ulil, the Lord of Itzamal, a neighboring city, joined Chac Xib Chac. Hunnac Ceel put his dependence on the "Seven Men of Mayapan," all of whom had Nahuatl names.

This civil war was decided by the introduction of a new weapon. Not only were the Mayas a peaceful people, interested in architecture, sculpture, the arts, letters, and agriculture, but their only weapon was a type of throwing spear. It was with such weapons that Chac Xib Chac's untrained army was equipped. Hunnac Ceel, on the other hand, had Nahuatl warriors, men of a naturally warlike disposition, trained to arms and understanding the use of the bow-and-arrow. To such an unequal contest there could be but one end. Chac Xib Chac was defeated, Chichen Itza was seized by the forces of Mayapan, and the Xiu or Itzas were driven forth.

It was not to be expected that the Itzas would tamely submit to this, and they raised the flame of revolt through the land. Hunnac Ceel, partly as a measure of defense, and partly as a reward, handed over the city of Chichen Itza to his Nahuatl allies. But that seems to have been as far as Mayapan was able to get. Whether Uxmal and Itzamal ever capitulated is not told in any record, but there are abundant signs that not only these, but many other cities toward the south, refused to yield obedience to Mayapan.

Traditions state that the Cocome Lords of

Mayapan, deserted by their fellow-Mayas, were compelled to lean more and more on Nahuatl allies and, consequently, they offered every inducement to the Nahuatl tribes to enter the country. About the end of the century the mercenaries had established a settlement of their own at Ahcanul, northeast of Campeche, and already they were in touch with their Aztec kin.

The tyranny of Mayapan grew more and more intolerable, until, in 1458, all the Maya nobles arose under the Lord of Uxmal. They attacked and sacked Mayapan, killing the Lord of Mayapan and all his sons except one, who was absent at the time. When the missing prince returned he found but a miserable remnant of his people. The Lord of Uxmal allowed the survivors to remain at Sotuta.

One of the strongest allies of the Lord of Uxmal had been the Lord of Itzamal. A noble of his stock, Ahchel, married the daughter of the high-priest of Mayapan. From this line came a third royal house, known as the Chel, with its capital at Itzamal.

Then followed forty years of petty wars between Xiu (Itzas), Cocomes (Mayas of Mayapan), and the Chel (of Itzamal). It was a time when the nobles suffered and the people prospered, for there was no wealthy center able to pay mercenaries, the power of the old nobles of Chichen Itza, Mayapan and Uxmal had passed away, and the priesthood, unable to save its temples from des-

truction, had lost the support of the people. Thus both civil and ecclesiastical taxation diminished.

The people, truly, prospered, but at the cost of their civilization. The League of Mayapan had been autocratic, the power of the Lord of Mayapan had been tyrannical. Yet, during that time, great cities had been built, great reservoirs constructed, great advances made in learning, great improvements seen in public life. When the power of the nobles ceased, all culture declined. Lacking compulsion, men ceased to work. Lacking a central authority, village feuds and quarrels revived. Presently, the whole country was seething in petty strife.

To the horrors of a fratricidal civil war was added pestilence. This is called by the Chilan Balam Chronicles "the pestilence, the general death." The initial cause of this appears to have been a terrific hurricane, wiping out many villages and causing the deaths of hundreds of people. The lack of any central authority to enforce immediate burials brought on the plague.

In the year 1517, the Spaniards first appeared in that section of the country, and, in the same year, the first epidemic of small-pox occurred, which ravaged the whole of Yucatan. Partly because of the evident wrath of the gods, and partly because a date of great religious importance was about to occur, those of the northern branch of the Xiu, or Itzas, who had survived the plague, asked the Cocomes to allow them free passage

through their territory to perform some ceremonies at the abandoned temples of Chichen Itza. The Cocomes agreed, but the Xiu were lured into a building and slain to the last man.

The southern branch of the Xiu, or Itzas, that great people which had first settled Chichen Itza, and which had been driven out as the result of the failure of the revolt against Hunnac Ceel, wandered south. From time to time, during the Fourteenth Century, they took part in the constant wars of reprisal against Mayapan. Steadily, however, they drifted south, returning to the central part of the Maya area, that fertile land which had been the scene of the glory of the Old Empire.

They passed by Lake Bakh'alal, which their ancestors had first seen, nearly a thousand years before, and settled on a peninsula jutting out into the Lake of Peten, south of the site of the old capital Tikal, and not far from Seibal. There the Itzas built their capital of Tayasal, or Peten-Itza.

Without question, they joined in the great attack on Mayapan in 1458, under the Lord of Uxmal, and when that mercenary-supported tyranny came to its just end, the Itzas returned to Tayasal. It was from this date, 1458, then, that the independent kingdom of the Itzas began, a kingdom which was to defy the power of Spain for a century and a half.

The first Spaniards to touch at Yucatan were de Solis and Pinzon in 1506. In 1512 de Balboa sent Valdivia to Hispaniola for supplies, but Valdivia

was wrecked on the coast and only twenty men escaped from the wreck. All of these save two were captured and offered up as human sacrifices by the Mayas. One of the two survivors married into the tribe. In 1517 de Cordoba headed an expedition to Yucatan to capture Mayas for the slave market. Near Champoton, an Itza settlement, the battle was joined and the Spaniards were routed with a heavy loss of life.

The first serious attack against the Itzas was planned by Cortés, when he sent de Olid to Honduras. But de Olid rebelled against Cortés. Whereupon, the Great Conquistador, the following year, decided to march upon de Olid by land, himself. After a long march, in which he surmounted incredible difficulties, Cortés at last reached Tayasal, where he made an alliance with the Canek or ruler of the Itzas. The Canek promised to destroy the idols, according to the account of Spanish historians, but did not do so. Cortés failed to send the friars, as he had promised. Neither party kept its pact.

In 1527, de Montejo led an expedition for the conquest of Yucatan. At the beginning, the campaign seemed easy, but soon the Mayas concentrated their forces, and split de Montejo's army so that one-half was compelled to fortify itself at Chichen Itza, the other half at Villa Real. The Indians besieged them and shut off all food supplies with the result that the Spaniards were compelled to desert both their centers and beat a retreat. In

1535, the elder de Montejo resumed his effort at conquest, and, in order to concentrate his power, abandoned all Yucatan except the Province of Tabasco. In the same year the friars entered Yucatan, but only further incensed the natives by burning their idols. The long-planned second attempt by de Montejo, in 1537, resulted in another disastrous defeat.

In 1540, the younger de Montejo secured the alliance of Tutul Xiu of Manu, with numerous vassals. The Cocomes and Chels gathered against him at Itzamal and raised the whole of the Tihoo country. But, in a decisive battle, in which no less than 70,000 Indians were arrayed against the Spaniards, the conquerors won a complete victory by the aid of their fire-arms, their horses, their armor and their allies. At this battle, the main part of Maya resistance was destroyed at one blow.

The Dominican friars arrived in Yucatan in 1544. Then, truly, conquest began. The whole northern part of the province and, soon after, all that section of the country except the Kingdom of the Itzas came under submission. The good friars abolished human sacrifice, established schools, doctored the sick, taught better methods of living, and were, indeed, the main civilizing factor in the conquests made by the Conquistadores. Central America owes a mighty debt to the heroes of the Cross.

As yet, however, all Spanish power ceased at

the frontier of the Kingdom of the Itzas. Tayasal, or Peten-Itza, had become a great fortress. The tribesmen had a well-deserved reputation as fighters. Spain was busy elsewhere. The governors of New Spain thought wiser to let the Itzas alone.

For some reason—possibly the gradual spread of higher ideas—the Itzas reached a point where they were willing to consider an alliance with the Spaniards, and they sent an embassy. Spanish historians recorded that this embassy was rebellious in its character, since it presented the chief of a wild tribe as bargaining on equal terms with the King of Spain. Historical truth compels the comment that the Itzas were in the right. As an unconquered people, their claim to courteous consideration was just.

The Spanish civil authorities were not willing to consider anything from the Indians except utter subjection. The monks were less concerned with formalities. Being sincerely zealous for the furthering of the Christian Faith, they prepared to enter the realm of the Itzas. There followed, then, the romantic and adventurous missions of the Franciscan friars, two of whom actually did make their way to Peten-Itza, were received by the Canek and were given an opportunity to explain their religion. The priests of the Itza temples, even, gave them a quiet hearing. At the close, the Canek admitted that the Itzas had promised Cortés, a century before, to receive Christianity at an appointed date, but that the

date had not yet come. So saying, he allowed the friars to return unharmed.

This mission of the two Franciscan friars had a side-effect of great interest. This dispute about the date caused the Spanish narrator to give the date mentioned in this conversation both according to the Gregorian Calendar used by the friars and according to the Maya date mentioned by the Canek. This is one of the seven historical dates by which the correlation between Maya and Christian chronology has been accomplished.

This mission of the friars had not pleased the civil authorities. They were sure that there was gold in that country, and they were afraid lest the Church should secure a prior claim. Further ecclesiastical effort thus was blocked for a time by the military power.

Then came the famous mission of Fray Delgado, in 1621. This is one of the romantic adventure stories of all time. It reads with the thrill of a sensational tale, and yet pulses with heroism, with sincerity and truth.

Briefly, Fray Delgado offered his life to Christianize the Itzas. He asked to be allowed to go alone. He courted rather than feared martyrdom. The Military Governor was not willing that the friar should go alone; rather, he felt, Fray Delgado should fare forth with the chivalry as well as the faith of Spain at his back.

Captain Mirones was put in charge of a band of soldiers, who were instructed that they were to

act only as an escort to Fray Delgado and his Indian converts. On arriving at the Spanish post at the frontier of the Itza country, Captain Mirones found that the friendly Indians under his command were afraid to face Itza foes. The white soldiers were too few. Whereupon Mirones halted, and sent back to the north for reënforcements.

Fray Delgado protested, declaring that the Sword had failed before, but the Cross might succeed now. Mirones stuck to his orders. Meantime, while waiting for reënforcements, the greed for gold took hold of Mirones. Finding himself in a country where little or no trading had been done, the captain undertook to trade with the natives, and cheated them outrageously. The Indians soon found out from their fellows in Mirones' party that they were being swindled, and, in the course of a few weeks, the Spanish captain had turned all his allies against him, and he found himself in the midst of a hostile country.

Under these conditions, seeing the growth of hate where he had purposed only to develop love, and realizing that nothing could injure his mission more, Fray Delgado gave Mirones the slip. One night, Delgado and his Indian assistants, without a single soldier to accompany them, slipped out of camp and started on the march to Peten-Itza.

Mirones was in a quandary. He could not follow Delgado and have the reënforcements arrive to find no leader. His orders were to escort Del-

gado. In this difficulty, he sent a small guard of twelve soldiers after the friar to persuade him to return. Fray Delgado refused, but accepted the men as a bodyguard.

After a long march they arrived at Peten-Itza, only to be confronted by an army able to overmatch any force that the Spaniards might have sent. When, however, scouts from his army reported to the Canek that there were but thirteen white men in the invading party, one priest and twelve soldiers, the Lord of the Itzas agreed to allow the whole party to cross the lake and to land on the island of Tayasal or Peten-Itza.

The Canek received him courteously and Delgado's mission was going well, when he roused the anger of the priests of one of the temples. This was the Temple of the Horse.

The story of it was a curious one. When Cortés had passed through that region, a century before, he had left a sick horse with the Itzas, saying that he would redeem it on his return. The Indians thought the horse a god-animal and offered it no food. The horse died. Believing this to be the god-animal's anger against them, the Itzas constructed an immense idol of a horse, and built a temple around it, to show Cortés—who was regarded as the White God Quetzalcoatl—that, while they had not kept the sacred horse alive, they had, at least, maintained a worship of it.

Fray Delgado arrogantly denounced this idolatry of the horse as both foolish and wicked. He

declared openly that he had come to substitute the true faith for the false, to abolish human sacrifice and to lead the Itzas away from the worship of idols. To make his meaning clear, he added that he and his men would hew the idols to pieces and burn them. The Canek replied, calmly, that the fate the friar had decreed for the idols should be his own. The decision was carried out to the letter. Fray Delgado and the twelve soldiers were cut to pieces and burned.

Meanwhile the reënforcements for Mirones had arrived. So the captain sent two of his best soldiers, accompanied by a crafty Indian guide, named Ek, to try and find out what had happened at Peten-Itza. But the Itzas were sharply on the watch, and no sooner had the disguised Spaniards appeared in the city than they were caught—and promptly offered up as human sacrifices. Ek managed to escape and made his way to Captain Mirones, to whom he told the fate of his companions.

The Spanish captain at once prepared to advance upon Peten-Itza, but it was too late. The countryside, already inflamed by the Spanish cheating and excesses, also heard of the massacre of Fray Delgado and the fourteen Spanish soldiers. This evidence that their foes were not invincible increased the blood-lust of the Indians.

The very next day, when the Spaniards were all at church, thousands of Indians crept out of the woods and surrounded the little building. From



Courtesy of The American Museum of Natural History.
IN THE CORNER OF THE COURT YARD, PALACE OF PALENQUE,



Courtesy of The American Museum of Natural History.
THE MOST PERFECT BUILDING NOW STANDING IN THE MAYA AREA.



THE TREE OF NOCHE TRISTE.

Tradition has it that for many centuries this great tree has looked down upon native and Conquistador in the great drama of the settlement of the Western Hemisphere. The name of the tree, which may be freely translated into "The Tree of the Sorrowful Night," was given it to commemorate the story that Cortes sought shelter below its branches and wept at his defeat at the hands of the Mayas.

the windows they poured flights of arrows on the unhelmeted kneeling soldiers. Without their artillery and their horses, the Spaniards were powerless. Not one white man escaped the ring of savage Itzas around the church. Of the friendly Indians, only three escaped to the north to bring news of the disaster. In 1624, therefore, the Itzas demolished the power of Spain in the Peten region so effectually that for another half-century the Spaniards did not even dare to send a punitive expedition into the region.

Fifteen years later, realizing that the Indians were slipping from military authority, the Spanish issued an order that, hereafter, spiritual urgency alone should be used against rebelling tribes. The power of Spain was weakening. Whereupon the whole province flamed into mutiny and one Maya center after another passed from Spanish hands back into those of the tribal chiefs.

Not until 1695 did Spain again undertake to subdue the Itzas. Three expeditions started simultaneously, from the north, from the east and from the south. Each expedition was under the direction of a different religious order. The northern expedition failed at the beginning. The eastern expedition found itself in difficulties as soon as it reached the land of the Quiches, and, though the Spaniards conquered in two small engagements, the guerrilla warfare was harrassing and the soldiers mutinied.

The southern expedition, from Guatemala,

found the march terribly long and weakening. The soldiers reached Peten-Itza, but, lacking canoes to cross the lake in order to besiege the island city and not having the tools to make canoes before the unhealthy rainy season should set in, they retreated without giving battle. Again the Itzas had successfully defied Spain.

In 1695 Fray Avendado started for the land of the Itzas, escorted by a small party of soldiers, under Paredes. Again the long march, the terrible climate and the avarice of the Spanish soldiers who ill-used the Indians, crippled the friar's plans, and he was compelled to return. Whereupon, nothing daunted, and having learned the topography of the country on his first trip, Fray Avendado renewed his journey the following year. The padre advanced slowly, making friendships with Indians all the way and saw to it that no member of his party gave offense. Thus, at last, the friar reached Peten-Itza, and was received by the Canek.

Fray Avendado, very skillfully, promised the friendship of the Spaniards, pointed out that Cortés had desired an alliance, and even baptized several of the chiefs. All was going well when some of the Itzas who had been plundered by the soldiers on Avendado's first expedition began to make trouble and inflamed the other Indians. The Canek aided the friar to escape, and his lone march thence, through the jungle, with savages seeking him, ranks as one of the most marvelous

feats of human endurance on record. He alone of his party reached safety. And, when he arrived, he learned that the Canek had sent word of allegiance to the Spanish Governor at Merida.

With the report of Fray Avendado and the message of homage from the Canek, the way seemed clear for the Spanish to take possession of Tayasal. Warned by the friar, however, that they were likely to encounter resistance, despite the Canek's message, the Spaniards sent a large force of soldiers while bearers carried canoes. A solid road was cut through the jungle, and the march was conducted with strict military precision. In 1697, the Spaniards reached Lake Peten.

At dawn one summer day they put their canoes in the water. The Itzas gave battle. The engagement soon became general, but, by eight o'clock in the morning, all was over. Firearms in the Spanish canoes and artillery from the shore were potent against obsidian-headed spears and bows-and-arrows. Peten-Itza, or Tayasal, was occupied an hour later. One of the temples was turned into a Christian church and the arms of Spain were engraved above the Canek's residence. The glory of the Itzas passed, and Tayasal sank to the level of a provincial village. Even its name, now, is lost, and the ramshackle little town of Flores stands near its site. So ended, forever, the Kingdom of the Itzas.

The history of the Kingdoms of the Quiches and Cakchiquels is much more difficult to unravel.

Their earliest myths resemble the myths of the Mayas, and cannot be dissociated. It will be remembered that, when the Old Maya Empire fell, the Mayas who went from Copan to Quen Santo desired to carry on the glory of their ancestors. But, on trying to colonize the highlands of Guatemala, they found there a warlike Mayan people, similar to themselves in language, but without civilization. The colonists from Quirigua and Copan, few in number and enfeebled by disease, were unable to overcome the wilder and warlike Quiches. They were absorbed.

Thus, during the period of enfeeblement which is known as the Transition Period, while the northern Mayas gradually regained strength in preparation for the formation of the New Empire, the southern Mayas became practically lost. When, later, the Quiches and Cakchiquels began to form a kingdom of their own, only a trifling amount of the Maya culture was continued.

Most important of all, the gods of the warlike Quiche tribes were different from those of the Mayas of the Old Empire. This was destructive to Maya influence. Much of the Mayan system was built around the religious calendar, and, when the gods lost authority, the calendar fell into disuse. Hence, after the establishment of Quen Santo, both the Mayan systems of counting were lost to the southern peoples. As yet, no Quiche monuments have been found which can be correlated to the chronology of the Mayas. Their tra-

ditions, therefore, must be taken on their own merits.

Omitting the mythical Quiche story prior to the Maya period, the legend goes on to tell that the fifth king of Tula left that place (wherever it may have been) and wandered into Guatemala. This king died and his son became chief of the three tribal divisions: the Quiches, the Cakchiquels and the Zutugiles. He settled at Utatlan and divided the empire into three kingdoms. "This division was made on a day when three suns were visible at the same time," says the old manuscript. The names of seventeen monarchs of Utatlan are recorded.

The tale tells how the king of the Zutugiles ran away with the daughter of the king of the Quiches. A bloody war followed, and the armies—according to the manuscript—were very large. Five battles are described, at the last of which the King of the Quiches was slain by the Zutugiles, and 14,000 Indians were left dead on the field. Cotahu and Iztayul (the first truly historical characters) wreaked a terrible vengeance on the Zutugiles. Gugumatz, either a vassal ruler or a general, re-established Utatlan, from which, it would appear, the Quiches had been driven out for a short time.

For some reigns there was a sullen peace, and, during this time, the Quiche power rose to its greatest height. This culminated in the victorious career of Quicab, who not only subdued the Zutugiles, but also reduced the Cakchiquel monarchs to

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the position of vassals. The phrase that "they were permitted to rule at Iximche by the grace of Quicab" shows that the great buildings at Iximche had already been built.

Quicab (possibly the same king or a ruler three reigns later by the same name) was on the throne when the Spaniards came. Montezuma, after his capture by the Spaniards, sent a message to the King of the Quiches urging him to resist the Spaniards, who were advancing against him. The king called on the priests for favorable auguries, but the oracles were all against him. He summoned his allies, but they betrayed him. According to Quiche tradition, Quicab died in an attack of rage from the offense to his pride.

His son, Tecum, rallied all the tribes to his standard. Marching through the kingdom, he gathered war-party after war-party until he took a stand on the plain of Tzaccapa with an army stated by the records to have numbered 230,000 men, making a camp so large that it included several mountains, all of which were fortified by a wall. The Spaniards attacked this camp and were repulsed four times, but finally they routed the whole Quiche army. Tecum singled out Alvarado, the commander of the Spaniards, and in three hand-to-hand combats with the well-armed cavalier fought valiantly, though his own weapon was but an obsidian-studded club. In the third contest Alvarado pierced the Quiche chief with a lance. Thereafter, the battle turned to a general slaughter.

On the death of Tecum, his successors, Oxib-Queh and Beheleb-Tzi, surrendered to Alvarado, both sides pretending friendship. The Quiche kings invited the Spanish conqueror to enter the city, planning to set fire to it as soon as he was within the walls. But the plot was revealed to Alvarado, who seized his guests, loaded them with chains, tried them by court-martial, and condemned them to be burned alive. This sentence was carried out to the letter, and, in 1524, the last legitimate sovereigns of the Quiches perished in the flames. So ended the Quiche Kingdom.

While the Zutugiles played but a small part in this Central American history, the rôle of the Cakchiquels was of more importance, for, though occasionally vassal to the Quiches, they maintained an independent kingdom for several centuries. Like the Quiches, their records are only traditional, and there is no definite chronology until the coming of the Spaniards.

The tradition begins with Gagavitz, the mythical ancestor of the Cakchiquels, also a wanderer from the unknown center of Tula. It tells of long journeys and much fighting with many tribes speaking strange languages, together with many magical and mysterious episodes. After the death of Gagavitz, the Cakchiquels were divided into two tribes ruled over by Cay Noh and Cay Batz, who rendered allegiance to the Quiches. They were ordered to send tribute but were captured and robbed by the Zutugiles.

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The story follows with the names of four kings, after whom there arose a popular revolt against the Quiches, because Quicab had demanded the aid of the Cakchiquels against the Spaniards. According to Cakchiquel tradition, Quicab was defeated and killed in this revolt, a more likely story than the Quiche account that "his pride choked him." During this revolt it appears that Iximche was fortified.

The reign of Oxlahuh Tsii, which seems to have been a very long one, was occupied mainly with the revolts which the Cakchiquels waged against the Quiches with varying success. The Zutugiles became subject to the Cakchiquels instead of to the Quiches. This event is dated 1496. The establishment of Cakchiquel overlordship, however, brought about a violent insurrection in Iximche, which Oxlahuh Tsii put down with an iron hand. The tale reeks with treasons and plots, above all which the Cakchiquel monarch rode victorious.

In 1510, Oxlahuh Tsii, the Great King of the Cakchiquels, died, and was succeeded by Hun Yg. That year is famous in history by reason of an embassy sent by the Aztec Emperor, Montezuma, to the kings of Central America, but it was an embassy that failed, for neither the Quiches nor the Cakchiquels saw any value in any alliance with the Aztecs against a foe they had never seen. Yet in 1513 a wizard appeared who prophesied the doom of both the Quiches and the Cakchiquels. He was offered up as a sacrifice at Utatlan and

his prophecy forgotten. None the less, the doom was on its way.

A strange reference appears in the Annals for the year 1514 when it says: "The beasts and the doves came out of the forests and it was terrifying to see the beasts. . . . One hundred days after the doves had been seen to come from the woods, the locusts came. It was terrifying to see them pass." Next year Iximche was damaged by fire, and, in the years following, insurrections began anew.

The Annals say of the year 1521: "The pestilence began, O my children. First there was a cough, then the blood became corrupted. The number of deaths at this time was truly terrible." Even a year later: "The pestilence spread. The number of deaths among the people was terrible. . . . Then perished our fathers and ancestors. Half the people threw themselves into the ravines, and the dogs and foxes lived on the bodies of men. . . . All our fathers and ancestors died of the plague." Not until 1523 was the plague stayed. By that time most of the nobles were dead and scarcely a third of the population was left alive.

At the news of the coming of the Spaniards, the Cakchiquels, too weakened to fight, and too humbled by misery, sent an embassy of obedience to Alvarado in 1524. Alvarado accepted their submission, and, after his conquest of the Quiches, sent for Cakchiquel troops to aid in keeping the defeated Quiches in subjection.

Later in the year Alvarado marched into Iximche and demanded all the treasure of the subjected tribes. He also demanded the daughters of the nobles for sale into slavery, with the result that the few remaining chiefs of the Cakchiquels fled into the country, there to maintain a guerrilla warfare which was steadily but slowly stamped out by the Spaniards. By the close of 1524 all organized revolt against Spanish rule in Guatemala was at an end.

The kingdom of the Cakchiquels had outlasted the kingdom of the Quiches by a few months, only.

So passed away the last branches of the Great Maya Empire, stamped under heel by Spanish conquerors. Yet the Mayas may still be numbered by tens of thousands. Wise administration in Central America might yet reawaken the ancient fire and the old Maya stock might come to prominence anew.

CHAPTER X

THE POWER OF THE AZTECS

THE relations between the Mayas and the Aztecs are extraordinarily like those between the Greeks and the Romans.

The Mayas, like the Greeks, were an artistic and intelligent people who developed sculpture, painting, architecture, astronomy and other arts and sciences to a high plane. Like the Greeks, the Mayas were politically divided into states or communities which had little love for each other. And whatever the political differences of the Maya tribes might be, they were one in a common religion, a common oracle and a common thought.

The Aztecs, like the Romans, were brusque and warlike. Of themselves they had but a low culture, a rude religion and no art. They were soldiers first, and organizers afterwards. Everything that they touched, they brutalized. The Maya religion was degraded by the Aztecs into a bloody horror. Feudal relations among the Mayas became sordid slave-holding among the Aztecs. Yet Aztec law, government and military system were superior to the Mayan in every way.

Whence came the Aztecs? The answer to this

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question is less difficult than in the case of the Mayas. They were of Nahuan stock and came from North America. Their affinities have been traced northward to the rude Shoshonean stock of American Indians. They show no link to South America, either in culture, speech or physical characters.

That a people of so savage an ancestry should rise to sudden greatness need give no surprise, for their greatness was not their own. As an authority has stated: "The Mexican Aztecs were little better than ruthless barbarians newly clothed in the borrowed robes of an advanced culture, to which they had not had time to adapt themselves properly, and in which they could but masquerade after their own savage fashion."

What was this borrowed culture? Obviously not exactly that of the Old Maya Empire, since the boundaries of this empire were always south and east of the Isthmus of Tehuantepec, and the Aztec Empire was far to the north and west. The Aztecs never conquered the Mayas. Yet the culture was Mayan in its character. Research shows that, north of the Isthmus of Tehuantepec, there were at least three other lesser civilizations. These were the Zapotecs, of Oaxaca; the Totonacs, of Vera Cruz, and the Tarascans, of Michoacan. Each of these was earlier than the Aztec migration and influenced it.

The Zapotecan civilization endured for many centuries. Its area was a part of the Archaic Hori-

zon and many figurines are found in Oaxaca. Its earliest culture was clearly of the same origin as the Mayan but was not a direct offshoot from it. The hieroglyphs are cruder than those of the Mayan, and different. As yet they are undeciphered, but there is enough similarity between the two glyph systems to give hope that one may yet unlock the other. The Zapotec Calendar, while of the same general character as the Mayan, possessed different symbols.

The earliest Zapotec ruins—such as those at Monte Alban—date as far back, probably, as the ruins of the Old Maya Empire, but, lacking an understanding of Zapotec glyphs, this cannot be asserted with authority. On the other hand, the gorgeous structures at Mitla were occupied as late as the fourteenth century, when the Aztecs invaded the country. It is worthy of comment that the points in which Mitla least resembles Mayan architecture are the very points in which it most resembles the Inca temples of Peru.

There is an enormous amount of work waiting to be done in the exploration of Zapotecan culture. Many of the ruins have not even been visited by archeologists. None of the glyphs have been read. The relation of the Zapotecs to the Mayas is unknown. Their early history is a blank. Yet they developed a civilization which lasted a thousand years, they knew astronomy, writing, sculpture and architecture, they were skilled in the arts and

their influence on Central American culture was enormous.

The quarries of the ancient builders of Mitla have been discovered in the mountains near by. Holmes writes: "The feats of engineering necessary to transport masses of stone, many tons in weight, down a precipitous mountainside, accomplished by these Stone-Age quarrymen, would be regarded as important undertakings, even by engineers of today." Truly, the Zapotec country calls aloud for the decipherment of its history.

In the central part of the state of Vera Cruz lies the area of Totonac culture. The Archaic Horizon lifts a little in Totonac, and the precivilization figurines are more modern. Some of them are the finest pieces of clay modeling to be found in the New World. A most astonishing characteristic of them is that all the faces are laughing or smiling, and the expressions show a marvelous understanding of the play of facial muscles.

Totonac architecture was distinctly Mayan in its character. The finest example so far discovered is at Papantla, where there is an ornate pyramid of six terraces, with niches for massive statues. A later Totonac center, that of Zaca-potla, is Nahuan in its character. Totonac culture, then, like that of the Zapotecs, must have lasted for over a thousand years.

The Tarascan culture is both later and less characteristic. The Tarascans remained in the Archaic Horizon state longer than any of their fel-

lows. The language is mainly Nahuan. Their architecture points to the north, though influenced by the south. The characteristic culture-feature of the Tarascans is the yatacas, a T-shaped mound, semi-pyramidal, consisting of terraces faced with slabs of stone laid without mortar. Resemblances to the pueblos appear. The ruins of La Quemada, the southern limit of Cliff-Dweller culture, show Tarascan affinities. The ancient history of the Tarascans is absolutely unknown. They probably represent a pre-Aztec Nahuan immigration, which encountered the Mayas before the latter had developed their civilization.

It is just at the threshold of Nahuan migrations that the "Toltec" question raises its head. In the region peopled later by the Chichimecs and Aztecs, the incomers found an immense number of ruins. These were called "Toltecan" by the Aztec immigrants. They were also called "Toltecan" by the Mayas of Yucatan.

Historically, some of these ruins are of great age. They are built immediately upon the stratum containing the rude figurines of the Archaic Horizon. They show a slight relation to Tarascan culture and a strong affinity to Zapotecan culture.

It is somewhat profitless to discuss whether the "Toltecs" were a Mayan or a Nahuan people, for there is nothing left but the monuments and the traditions to settle the question, and these are flatly contradictory, the monuments showing an unquestioned Mayan character, and the traditions

equally definitely claiming the Toltecs as the ancestors of the Aztecs.

Lacking the chronology of the Mayas, all Nahuatl dates are shadowy. No credence can be given to the supposed date of 544 A. D., for the building of Tollan, as the tradition definitely states that there were four Tollans, one in each quarter of the compass. The most that can be said is that, when the Nahuatl tribes of later times wandered into the highlands of the Valley of Anahuac, or the Plain of Mexico, they found the country inhabited by a civilized people, builders of mighty temples, whose traditions pointed back to an occupancy of that region since the sixth century.

Spinden, a very careful worker, outlines a Toltec-Chichimecan chronology on the basis of the traditional "Annals of Quauhtitlan." This gives the legendary migration from "Chiconoztoc, the Seven Caves" (a mythical place of the Underworld), as 245 A. D. The first recorded date is 635 A. D. In 687 A. D., the Toltec-Chichimecan people established themselves at Quauhtitlan. In 726 A. D. the capital of the government was moved to Cuxhuacan. Three monarchs are named, and the stories of their reigns are told.

One of the most important dates is the supposed arrival of Quetzalcoatl, "The Feathered Serpent," described as a white man with a beard, who taught the people all the secrets of civilization and who was made ruler in 873 A. D. A reference under the date 883 A. D. that "this was the time of temple



Courtesy of The American Museum of Natural History.

SERPENT COLUMN OF THE TEMPLE OF THE JAGUARS, CHICHEN ITZA.

The hieroglyphics of the Aztecs are cruder than those of the Mayas, and different, and are as yet undeciphered.



Courtesy of The American Museum of Natural History.

A SCULPTURED ROOM OF MITLA.

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OF MONOLITHIC COLUMNS, MITLA.

building," points out that the ninth and tenth centuries were the Golden Age of the Toltec-Chichimecan culture. In 895 A. D. the government was moved to Tula (not the Tula of myth, but of history). During the next three reigns the Annals speak of the building of "noble and sumptuous edifices." Such vast and imposing ruins as remain at Xochicalco and San Juan Teotihuacan testify to this period, if, indeed, they be not earlier.

The fourth monarch of this line, Tlilcoahuatzin (also called Iztacquauhtzin), came to the throne in 973 A. D. But his reign, while one of power, was also one of disturbance. Disregarding the severe marriage laws of his people, he took into the royal palace the beautiful Quetzalxochitzin, the wife of one of his nobles, and insisted on their son becoming his heir. Many accounts speak of her as a sorceress, and the annals of that time are full of tales of the queen's witchcraft.

There had been for the past fifty years an ever-increasing succession of evil prophecies, of which two of the most famous were that the empire should be destroyed when a king with curly hair should sit on the throne, and that the sign of that coming destruction should be that rabbits would be found with horns like deer. The young son of this love match, who was named Uemac (also Topiltzin), had hair of this variety.

The old king was not to be dissuaded by this evil augury. When he found the burden of his years too great, he announced the succession of

his curly-haired son. This brought about a general revolt. Some of the nobles objected on the ground that the young monarch was not born in legitimacy; others that he was predestined to bring about the ruin of his country.

In defiance of the prophecy, Uemac came to the throne in 994 A. D., and, though young, speedily put down the revolt with a high hand. Soon the omens began to appear. Rabbits were found—so the tradition states—with the horns of deer, and strange birds with the heads of one species and the plumage of another darkened the sky. Uemac summoned the priests to explain away the prodigies, but they all warned him of the coming destruction.

“Soon,” says the chronicle, “the great famine began. Men died in great numbers. Worms and weevils devoured all the corn in the granaries. Then were witnessed a succession of terrible calamities. The skies seemed to rain fire, so intense was the heat, and for twenty-four years there was so terrible a drought that all the rivers and springs dried up.”

As the people of Tula weakened, enemies poured in on every side. Aboriginal tribes, such as the Otomi, attacked the outlying villages; two great armies of Chichimecs swept through the country like a scourge. In the year 1064 Tula was destroyed, and the aged Uemac, shortly afterwards, committed suicide.

Just as the word “Toltec” meant “builders,”

so did the word "Chichimec" mean warriors. There is every reason to believe that the Chichimecs were naught but Nahuatl invaders who came down and conquered Tula.

The Chichimecan records give another line of legendary history, of which the most important alleged date is the formation of a Chichimecan government by Tactli in 804 A. D. The chronicle states of the Chichimecs at this time that Tactli "was a king unacquainted with the sowing of grain, neither did he know how to make shelters for his subjects. He wore only a simple garb. The people ate only birds, serpents, rabbits and deer; as yet they had no houses, and came and went in all directions." As these are the first Nahuas of whom there is any approach to a definite history, it is clear from their own chronicles that they had no civilization of their own.

As soon as the Chichimecs conquered the civilization which centered at Tula, they dropped the name of Chichimec or warriors and called themselves Acolhuans. They set up their capital at Texcoco, and their empire has sometimes been known as the Tezcucan Empire. It is to be remembered that names and titles differ in all the traditional records of early Mexico. Thus the same king may be known by three or four names, while tribes constantly established subdivisions the names of which were often carelessly misused to mean whole tribes.

The Tezcucan Empire, however, has been given

far more historical importance than it deserves. It existed scarcely more than a century, and depended only on the fact that the Chichimecs, Acolhuans or Tezcucans, as they were variously called, adopted some of the Toltecan-Chichimecan culture. In their hands great monuments, such as the Pyramids of the Sun and Moon and the Pyramid of Cholula, were guarded and even repaired. Part of the old "Toltecan" religion was taken over, but brutalized and used as a basis for bloody sacrifices.

Yet, despite Chichimec barbarism, Nezahualcoyotl, their poet-king, who ascended the throne of Texcoco in 1425, was one of the most remarkable figures of prehistoric America. The poet-prince's father had been slain during an uprising of the Tecanecs—another Nahuatl tribe—which had captured the city of Texcoco. The prince passed years in disguise, but at last was permitted to return to the capital. His songs, however, so aroused the patriotism of the people that the Tecanecs saw their danger and tried to seize him, but Nezahualcoyotl "disappeared through a cloud of incense into a hole in the mountains."

The extortionate taxes of the Tecanecs gave further cause for a revolt, and the poet-prince led his followers against the usurpers, driving them forth and gaining his rightful throne. In this restoration to power he was aided by parties of Aztec warriors, newly arrived from the north.

Nezahualcoyotl became a harsh and unyielding

autocrat. He forced thousands of men into slavery in order to build luxurious palaces at Texcotzinco, all now fallen into ruins. Yet, like many despots, he was a patron of the arts. There was no road so sure to the royal favor as literature. He urged the writing of the annals of every town and village of his country, and gathered these into a great collection. This library was destroyed by the first Spanish Archbishop of Mexico, who could see nothing of value in the picture-writings, filled, as they were, with drawings of heathen gods. The destruction of these records was a terrible and irretrievable loss to America.

This was the Golden Age of Texcoco, and it was further aided by its inclusion in the Triple Confederacy, founded by the rapidly growing Aztec power, with the Tepanecs as subordinate. In 1430 the Aztec Confederacy definitely became dominant by its decision that all military action should come from Tenochtitlan, the capital of the Aztecs. From that date onwards, Nahuatl history is mainly concerned with the Aztecs.

Whence and when came the Aztecs? Their myths, of course, set the date of their origin far back in the mists of antiquity. They, like the Chichimecs, claim to be the original people who ascended from the Seven Caves of the Underworld. Yet the truth remains not only that the Aztecs were the latest of all the Nahuatl tribes to enter Mexico, but also that they were the rudest and

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most barbarous. They were fighting men, and nothing else.

The Aztecs seem to have followed close upon the heels of the Chichimec migration, but in small war-parties, each under a tribal chief. At first their numbers were only a few score. Then three separate bands can be traced. Their organization was ideal for mercenary soldiers. It has been seen, already, how the tyrants of Mayapan engaged them. So did every other ambitious chief. The Aztecs fought on whatever side they were paid to fight.

For a time, while in the pay of the Tezcucans, a cluster of Aztec bands lived at Chapultepec. Then they got in trouble with a local chief and removed to Acocolco. There they remained for half a century, constantly increasing in strength and power, and being reënforced, year by year, by additional parties coming down from the north. The Tezcucans then moved the Aztecs to Colhuacan, and they gave a taste of their quality by inflicting a disastrous defeat against the Xochimilca, with whom the Tezcucans were at war. Thence they changed their quarters twice, finally settling at Tenochtitlan (now the City of Mexico) in 1325.

Seven clans of the Aztecs finally centered at this place, and there are lengthy and complicated records of their petty wars. Not until 1376 did they elect a king. The choice fell upon Acamapitzin, grandson of Coxcoxtli, the king of the

Acolhuans, and of the line of the old Toltecan-Chichimecan kings. To him succeeded Uitziluitl, Chimalpopoca and Itzcoatl, the latter of whom broke the power of the lesser tribes and established the Aztec Confederacy of Tenochtitlan (Aztec), Texcoco (Tezcucan), and Tlacopan (Tepanec).

With the decision in 1430 that all the military actions of the Confederacy should be initiated by the ruler of Tenochtitlan, the great power of the Aztecs began. Itzcoatl, a prudent king, instead of sending large armies to conquer and destroy rival cities, sent embassies and laid them under tribute. The only political requirement was that the rulers of each of these cities should be indorsed by the Aztec king.

Great were the deeds of Itzcoatl, but a greater than he arose in Montezuma I, his successor. This monarch began his reign by a short but decisive campaign against the Tlascalans, a small Aztec tribe living in the mountains, who had maintained their liberties against all the attacks of the surrounding peoples. Montezuma decided that, for once, their spirit should be broken, and he sent an army to capture prisoners who should be offered up as human sacrifices for his coronation.

Montezuma had no intention of being a king to whom vassals should render a negligent tribute. The warlike ruler of warlike people, he sought and secured an imperial throne. His armies went east and south, conquering everywhere they went.

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Slaves were captured by thousands and sacrificed by hundreds. Tribute of every kind poured into the rapidly growing and fast-enriching capital of Tenochtitlan. Before the death of Montezuma I, in 1469, practically every tribe in Mexico was either subjugated to the Emperor of Tenochtitlan or else was paying tribute under an alliance more or less compulsory. The Aztec Empire held all the Nahuan peoples in an iron grip, and overshadowed the Maya centers of the Zapotecs and the northern Itzas. The Tlascalans, alone, defied the Aztec power.

The rise of the Aztec power, from the date of the first election of a king to the death of Montezuma, was less than a century. In that century the Aztecs passed from a condition of savage warriors in the hunting stage to an outwardly civilized state. This mushroom empire differed radically from the Mayan culture which it had roughly adopted.

The history of the Valley of Mexico consists of successive conquests by primitive and warlike North American Indian tribes, who adopted a culture of which they knew nothing and which shows kinship to South American culture. Moreover, the wilder tribes bordering this Mayan culture, and which were living in an Archaic culture, also were kin to the coast tribes of South America. There was, therefore, neither any racial or cultural affinity between the occupants and the Nahuan invaders.

The Aztecs were conscious—as their own records show—of their intellectual inferiority, and they did their best to adopt the life, habits and faiths of the conquered people. In every local conquest they propitiated the local gods, though they did their best to subordinate them to their own chief deity. Before many years had passed, their own Aztec deity became the Mayan chief god, under another name.

It is this which makes the Aztec religion so confusing. The gods of the Mayas, of the Tlascalans, of the Tarascans, of the Mixtecs, of the Totonacs, of the Olmecs, of the Zapotecs and of the Chichimecs, even of the primitive Otomi, were renamed with Aztec names, and housed, in some fashion or other, in the Aztec pantheon. Moreover, the Aztecs, with their natural bloodthirstiness, twisted the religious ceremonies of all these tribes into orgies of human sacrifice. Not less than 20,000 human sacrifices were made every year in the Aztec Empire, and at times vastly more. On one occasion alone, at the dedication of the temple of Huitzilopotchli, 80,400 victims were sacrificed in one week.

After the death of Montezuma I, revolts promptly arose among the various tribes against his successor, Axayacatl. In 1472, or three years after his accession, an insurrection was launched under Moquinux, of Tlatelolco, which seriously threatened the Aztec power. The insurrection

failed, however, so a punitive expedition was sent to Tlatelolco, and Moquinix was slain as a traitor.

The Aztec monarch followed up this success by a further expedition to the Zapotecan country, and even beyond the Isthmus. He also reconquered the region of Cotaxtla, which had revolted, so that his successor, Tizoc, who came to the throne in 1469, was monarch of a wide realm. Tizoc was an administrator rather than a conqueror, and made firmer the Aztec supremacy over the districts which his predecessor had conquered.

In Auitzotl, who came to the throne of the Aztecs in 1482, another military chief appeared. In administration he was of the utmost cruelty and ruthlessness, and his armies left a trail of blood wherever they went. He pushed beyond the Isthmus and made extensive expeditions into Guatemala, sowing death and destruction, without actually subjugating the country. In addition to the raising of the great temple of Huitzilopotchli, famous for the rain of human blood at its consecration, Auitzotl constructed the great aqueduct from the mountains to supply pure water to the city. He was as insatiable in public work as in war.

Montezuma II, better known as Montezuma the Great, succeeded in the year 1502, a monarch singularly ill-fitted for the work which was to be thrust upon him as Emperor of the Aztecs in the most trying days of its history. For Montezuma, unlike his predecessors, was more priest than king,

a better judge than a warrior. He spent an enormous sum of money to equip and send against the Tlascalans the largest Aztec army that had ever been gathered. But those determined mountain warriors fortified the approach to their dominions with a stone wall six miles long, and, by the aid of this addition to their natural defenses and former fortifications, they repelled the invaders with heavy loss.

Montezuma's chief interest lay in the formation of an aristocracy which should be dependent only on the throne. He appointed the minor kings and princes of the surrounding provinces to form his court. With the aid of the priestly caste, he elevated himself to a semi-divine state. He devised a ceremonial as gorgeous in its barbaric magnificence as any that the world has seen. His new nobles aided him in the extortion of treasure from every corner of Mexico. Montezuma was able to carry this by his own remarkable personality, for his character was marred only by one weakness—superstition. At times he really believed himself to be divine.

One April day, in the year 1519, there came into the city of Tenochtitlan a swift runner, bearing a strange story. A fleet of great "water-houses" with white wings had come over the sea from the place of the rising sun. These floating and winged houses brought with them strange men with white faces and black beards, even such as tradition had described as the appearance of the

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great god and founder of their civilization, Quetzalcoatl, the Feathered Serpent. Nay, more! These white-faced men carried sticks from which they could pour out the lightnings at will. Nor yet were these all the wonders. Strange beasts of many colors, white, brown and black, took these white men upon their backs and ran hither and thither.

Montezuma and his priestly advisers met in solemn conclave. No tradition was more firmly established than that Quetzalcoatl would one day return. At his first visit, the Fair God had established civilization. He might be bringing them, now, some even greater boon. Some of the priests suggested that Quetzalcoatl (under another name) had been the god of the Mayas, and not of the Aztecs, and hence might come as an enemy. Other priests held the intrusion of strangers to be a menace, no matter whence they came. The council was divided. Montezuma sat silent. In his heart he believed that Quetzalcoatl had come, and in his heart he knew that the semi-divinity which he had assumed did not belong to mortal man. He shrank and was afraid.

Well might Montezuma tremble, not because the white men were indeed gods, but because they were gold-hungry adventurers, rapacious freebooters, cavaliers of an inordinate pride of race, and fanatics to a man. Admirably armed and equipped, with firearms, artillery, armor, horses, weapons of finest steel, led by trained captains

of war and accustomed to discipline, the Spaniards were incomparably the superiors of the Aztecs. For the latter, despite their warrior qualities and their numbers, were but lightly clad savages, their arms were of arrows tipped with points of flint or clubs studded with jagged bits of obsidian, and they had never confronted a foe better armed than themselves.

When the Conquistadores set sail under Cortés, among them such captains of war as Pedro de Alvarado, Cristobal de Olid, Velasquez de Leon, Gonzalo de Sandoval, and Alonzo de Avila, the fleet consisted of eleven vessels. Cortés' force contained nine hundred Spaniards and two hundred Indians, with ten heavy guns and a number of light field pieces, as well as an abundance of muskets and plenty of ammunition.

The story of their first landing reads like an epic: how they arrived at the Island of Cozumal, fought with the Indians of the mainland, stormed the pyramid-temple, sent the hideous idols rolling to the ground and set a Christian altar on the blood-stained site. It reads, too, like a romance: witness the charming idyll of Marina, the beautiful girl slave who was given to Cortés at Yucatan and who became his adored companion as well as his interpreter. It is a chivalric and gentle tale.

Then came the landing in Mexico, the establishment of the little colony of Vera Cruz on the shore, the maneuvers of the ships and the unloading of

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guns and horses. The local Indians gathered, full of fear, to watch the strangers.

With a view to impressing the natives, Cortés ordered a military review. The horses caracoled. The guns thundered, shooting trees to splinters. Volleys of musketry were fired. The soldiers, shining in their flashing armor, went through a military drill.

All this the provincial Indians saw. All of it they wrote and drew in picture-writing with their vivid brushes, for swift runners to take over the mountains to the court of Montezuma. In Tenochtitlan, indeed, these picture-writings were received with mingled dismay, fear and adoration. What could these men be but demigods? And who could their leader be but Quetzalcoatl come again?

It was not in the manner of Cortés to delay. At once he called the cacique or local chieftain and ordered him to take a message to this "Emperor" of whom the cacique spoke. In this message Cortés declared that he was an ambassador from a white Emperor beyond the sea, and was ready to present himself and his gifts.

The cacique was aghast. To him, Montezuma was divine. An embassy seemed to him nothing but blasphemy. He could not conceive that any overseas monarch could be of such importance as even to dare to send an envoy to Montezuma. To all intents and purposes he declined to send such a message, softening his refusal, however, with gifts of featherwork and gold. At the latter, the

eyes of Cortés' men glittered greedily. Cortés replied with gifts of cut glass, of steel and beads. As glass was unknown, these were held to be gems of too great a price to be kept by the cacique, and the presents were sent to Montezuma.

The Aztec Emperor now was beginning to allow his fears to overcome his desire to see a god. He returned a message that Cortés should not come, that the road was long and dangerous, and sent his greetings to the king of the strangers. But, alas for Montezuma, he accompanied this chilling message with gifts of marvelous articles of gold, among them a calendar wheel of gold and silver estimated in value at \$250,000 alone, necklaces of rubies and pearls, and much of the intricate and marvelous featherwork of the Aztecs.

With that golden wheel as an example of possible plunder to be obtained, Cortés was not to be rebuffed. He sent a curt message to the Emperor that the dangers of the road meant nothing to him or to his followers, and that he intended shortly to visit the capital. Montezuma replied with an abrupt dismissal, softened by more presents. The Emperor's generosity was his downfall. The Spaniards deemed no danger too great, so long as gold was in view.

Then the tide turned favorably. The Totonacs, weary of the oppression of Montezuma II, sent an embassy from Cempoalla to Cortés, suggesting that the Spaniards might aid them in their struggle for independence. Cortés, seizing the chance

to increase friction and division among the Indians, marched along the sandy shores of the gulf to the great town of Cempoalla.

Montezuma had spies, however, and knew all that passed. He sent two tax-collectors to the Totonacs, demanding an instant increase of tribute for their disloyalty in having befriended the invaders. Cortés promptly caused the seizure of the tax-collectors, thus compromising the Totonacs with Montezuma beyond repair. Then he secretly freed them, and sent them back to Tenochtitlan with a friendly message to the Emperor.

The Totonac cacique, meanwhile, entertained the Spaniards hospitably. In addition to feasting them, he gave one of the young maids of the tribe to each of the Spaniards for a personal slave. Fray Olmedo, the friar of the expedition, declared that he would grant permission for his men to keep these slaves only on condition that the girls should be baptized.

This baptism was made the excuse for a fanatic attack. The idols at Cempoalla were torn from their pyramid sanctuaries and hurled to the ground, while Christian services were held on each of the temple-mounds. The Totonacs resisted savagely, but the trained and armored Spanish soldiers, with firearms, slew men and priests, women and children, remorselessly. The slaughter over, they voiced their hymns of rejoicing amid the death-groans of those who had been their kindly hosts for many weeks.

Much plunder was secured at Cempoalla, and this was sent to Spain by a swift ship. Many of the soldiers wished to return, but Cortés knew that the only road to conquest was to push on. Secretly, therefore, he arranged that the ships at anchor should be scuttled, thereby preventing return and putting an end to mutiny. There lay before the Spaniards no other way but to march on the Aztec stronghold.

Cempoalla was on the sea. Tenochtitlan was on the other side of the mountains. Before and above them, over ten thousand feet high, towered those terrible cliffs. The climate was insufferable, the path incredibly steep for men in armor.

At last they came to a great wall, ten feet high, which marked the boundary and the barrier set up by the Tlascalans. Against it, even Spanish artillery and Spanish courage might have battered in vain. But the Tlascalans were not there.

Divided counsels had prevailed in Tlascala. Some believed the Spaniards more than human, others did not. Some of the chiefs held that this was the time to secure an alliance with Montezuma by massacring the invaders; others felt that an alliance with the strangers would cement their defiance of Montezuma. This indecision enabled the Spaniards to pass the barrier.

Finally the Tlascalans decided on treachery. They sent a large army out to attack the Spaniards, but without military leaders. Thus, if the invaders were slain, all would be well; if the

strangers were victorious, the chiefs could show that the attack had been made without their consent.

The battle was a fierce one, and the issue hung doubtful for many hours. The army of the Tlascalans was indeed too large, too unwieldy for maneuver, and the bullets mowed them down in masses. In hand-to-hand combat the steel blades of the Spanish cleft the Indian shields of hardened skin as though they were paper. When night fell, the Tlascalans were conquered. In a few hours the Spaniards had done that which the whole power of the Aztec Empire had never been able to do. The Tlascalans, once defeated, surrendered and became as faithful allies to the Spanish as they had been fierce foes.

After some weeks spent in Tlascala for rest and recuperation after the march and the battle, the Spaniards set out for Tenochtitlan. First they had to pass the country of the Cholulans, where lay the great Pyramid of Cholula. Already, a complication of embassies had come. Montezuma, realizing that the strangers could not be withstood, now offered them audience, but warned them against the Tlascalans and urged passage through the Cholulan country. An envoy, offering alliance, had come from the Tezcucans.

The Tlascalans offered divided advice. Those who still wished the destruction of the Spaniards urged passage through Cholula; those who wished the destruction of Montezuma urged Cortés to

evade issue with the treacherous Cholulans. The Spanish leader, believing that at all hazards he must not show fear, marched straight forward.

It may have been true that the Cholulans meditated treachery. Marina, at least, declared so, and Marina was the Spaniards' source of knowledge. So, when Cortés arrived in Cholula, and all the people—some in arms and some in holiday garments—filled the streets to see the strangers pass, a wave of murder swept over the scene. No one can say whether a Spanish sword-blade or a Cholulan obsidian-studded club was the first to fall. But, as in a flash, the scene turned to a desperate struggle. Into the mêlée came a horde of wild Tlascalans, seizing the chance to wreak their hate upon their hereditary enemies. The Spaniards could do no less than help their allies, and Cholula ran with blood.

Six months had passed since Cortés had landed. The power gained by the Spaniards had been enormous. The Totonacs had capitulated. The Tlascalans had been defeated and had become allies. The Tezucans had offered submission. The Cholulans had been slaughtered. At every temple along that line of march the Aztec gods had been thrown down and a Christian worship instituted. The men were already rich beyond the dreams of avarice. All the borderland and the eastern mountain slope of Mexico was subject to the King of Spain.

Came the 8th of November, 1519. Along the

great stone-made causeway which crossed Lake Texcoco, several miles in length, rode Cortés and his soldiers, a handful of men to destroy an empire. Their armor was polished, their muskets ready. The big guns rumbled in the rear. On horseback the leaders clattered up the stone-paved streets of Tenochtitlan to Montezuma's palace. Tens of thousands of Aztecs watched dumbly. Never a hand was raised against the invaders, for the word of the priests had gone forth that this was indeed the god Quetzalcoatl, returned from the Land of the Sunrise.

For six days the Spaniards were the honored guests of their royal host. Then whispers of treachery came to Marina's ears. At close quarters, the Spaniards did not seem god-like. They were too humanly fond of food and wine, too lustful for fair women and red gold. Cortés, who knew well that his safety lay only in the superstition of his divine origin, feared lest a word might destroy everything. Without excuse, he suddenly seized Montezuma, and, phrasing his order as an invitation, forced the great Emperor to accompany him to the stone fortress which had been set aside for the Spaniards as their habitation. Montezuma, still uncertain as to whether Cortés was god or man, surrendered himself, weeping.

At the conqueror's orders, two of the chiefs who had slain two Spaniards in a former battle were brought to the capital and delivered to Cor-

tes. He bound them to stakes in the courtyard and burned them alive. Montezuma was put in chains.

Dark days loomed near for Cortés. His captain, left at Vera Cruz, reported that ships under Narvaez, sent by the jealous Spanish governor of Cuba, menaced the Spanish base. Marina warned him that the hate of the Aztecs in the capital was at fever heat. But Cortés was no coward. He left Alvarado to guard Montezuma and to maintain the Spanish power in Tenochtitlan by keeping the divine Emperor as a hostage. Then, by forced marches, he reached Vera Cruz, attacked Narvaez and captured him. Greedy for plunder, Narvaez' soldiers flocked to Cortés' banner, and the return march began.

Meantime, in Tenochtitlan, Alvarado had failed. Under some provocation or overt act of treachery—just what, is not known—Alvarado repeated in the capital the massacre of Cholula. When Cortés returned, with reënforcements, Alvarado was besieged and at the last gasp. There were days and weeks of struggle. The Spaniards, who were as gallant fighters as the world has ever seen, fought unceasingly. In one famous sortie, with Alvarado on his right hand and Sandoval on his left, Cortés stormed the Great Pyramid. Sword in hand, against the serried phalanx of priests and warriors, step by step upwards, Cortés scaled the precipitous summit of the steps and terraces of the Pyramid of Huitzilopotchli, the War-God,

running red with blood. There the three Conquistadores slew the priests and warriors who guarded the shrine and toppled the great idol into the streets below. Even that did not stay the conflict. The enraged Aztecs, tens of thousands in number, fought steadily on. Day after day passed so. Food grew scant.

Then Cortés sternly ordered the unfortunate Montezuma to address the people. The astounded Aztec chiefs heard their divine Emperor bid them cease attacks upon the white men. But the power of his name was gone. The Aztecs, whose culture was but a borrowed one of yesterday, and in whose veins ran the blood of the redskin, had reverted to savagery. Suddenly Montezuma was seen to fall into the arms of the Spaniards. Some traditions say he was struck by a stone from a sling, some that he was stabbed from behind by the Spaniards. Grievously wounded, in any case, the once great Emperor was lifted below and died in a dark cell in the fortress, refusing Christianity to the last.

That night was the *Noche Triste*—the “Sorrowful Night”—so unforgettable in Aztec history. As heavily loaded down with gold as they dared, Cortés and his men fled by night. Their escape was seen. The great gong clanged the alarm as the Spaniards fled along the causeway. Ten thousand savages followed.

A breach had been made in the causeway. A temporary bridge was thrown across. In vain! The guns broke down the bridge. The Spaniards

were trapped. Those behind crushed those in front. Men and horses rolled into the lake. Spaniards and Tlascalans alike, fighting with blade, with club, or with teeth, were smothered under heaps of Aztecs who cared nothing for their own deaths if so be they might drive one blow into the living or the dead body of a hated foe.

The breach was filled. But how? With the corpses of Spaniard and Aztec. Upon their bodies the remnant rode, Cortés and his cavaliers in full sword-play. It was not yet dawn when a third breach in the causeway yawned before them. Alvarado, commanding the rear guard, was left behind. Cortés and the cavaliers, despite the panic—to their credit be it told—rode back in the teeth of apparent doom to the rescue. Alvarado, using a spear as a leaping pole, cleared the breach and joined his comrades. Still fighting, they made a bridge across the third breach, though it took all their bales of treasure, all they owned. When the morning light dawned, a few score Spaniards reached the mainland, not one of them unwounded. Not a gun was left, not a bale of baggage, not a round of ammunition, not a horse. Everything was lost but Christian faith and Spanish courage. Yet these sufficed.

Seven days later, the wretched soldiers who were straggling back in the hope of reaching Vera Cruz, found themselves confronted with ten thousand Otomi warriors. To wait was destruction. To advance seemed death.

Cortés led his men on. Protected only by their armor, that wearied handful of the chivalry of a great European nation defied odds of hundreds to one, the Great Conquistador himself in the forefront of the fray.

Almost at the last pitch of desperation, when not more than another one or two savage charges could have been repulsed, Cortés plunged into the thickest of the fight, sought the Otomi chief and killed him with a lance thrust. The Otomis, already losing heart from superstitious fear at the power of a few men who could outfight an army, regarded their chief's death as a sign from the gods and fled. So ended the battle of Otumba, regarded as one of the most extraordinary fights in the history of the world.

Cortés and the small remainder of the Conquistadores reached Tlascala. The Spanish leader had shown as much chivalry to his allies as to his own men. This, the Indians recognized. They made him welcome, gave him food, and, despite the failure in Tenochtitlan, renewed the alliance. Without their aid, the Spanish Conquest in Mexico would never have advanced further and Cortés would have left his bones in the Valley of Anahuac.

But the Spanish leader was a true master of men. He organized the Tlascalans and taught them warfare. He led them against the Tepenacs, allies of the Aztecs, and defeated them. He aided them against a punitive expedition sent by the

Aztecs and was again victorious. He secured the alliance of the Cholulans.

Meanwhile, with the aid of his allies, the iron-work from the ships which had been sunk off Vera Cruz was carried up those terrible mountain trails on the backs of natives, and the Spaniards set to work and taught the Indians how to build ships. They were built in pieces, then carried overland sixty miles to where a canal had been dug leading into the lake on which stood the city of Tenochtitlan. There the ships were assembled. The Spanish alliance with the Tezucans gave them control of one arm of the lake. Thence, upon ships built in the Mexican forests, the undaunted Cortés launched his fleet against the Aztec capital.

Cuitlahac, Montezuma's brother, who had been the leader on the "Sorrowful Night," had died from small-pox, while the ships were a-building. Guatemoc, Montezuma's nephew, reigned in his stead and defended the capital desperately. The weeks of siege were deadly, but the tide was turned by the welcome addition to the Spanish of new forces. Even so, when, after days and weeks of bombardment, an effort was made to take the city by that same fearful causeway on which so many had perished, a second disaster resulted. In this, Cortés and the others only escaped from death because the priests had given orders that they were to be captured alive for sacrifice.

This second disaster disheartened the Tlascalan

and the Tezcucan allies, and the Spaniards fought on alone.

Seeing the indomitable courage of Cortés' men, the allies rallied. The surrounding tribes, realizing that the Aztec Empire was no longer all-powerful, joined in the passive policy of refusing to send food to Tenochtitlan. Day by day the Spaniards grew stronger and the Aztecs weaker. Further Spanish reinforcements foretold the end. Pestilence and famine began to do their work.

Alvarado's men first found foothold in the capital. They found a city famine-stricken, life having been maintained by cannibalism only. Yet Guatemoc would not surrender. Cortés thereupon, allowed the Tlascalans to enter, and such slaughter followed as the New World had never seen before and would never see again. Forty thousand were slain in cold blood, and the night was spent by the Tlascalans in a cannibalistic feast.

At sunrise Cortés entered the city, hoping for a surrender from Guatemoc. The Aztec Emperor still refused. A musket-shot rang out as a signal. Whereupon there fell upon Tenochtitlan a second day of carnage, in which the Spaniards took full part.

By nightfall resistance was at an end. Tenochtitlan was waste. There were to be heard neither the groans of the dying nor the cries of the mourners. All inhabitants, to the very last, had been slain.

Next day, at sunrise, another party landed, led by the gallant and pious Fray Olmedo. Soldiers followed, but with rosary in hand.

From every temple the idols were thrown down. The shrines which, for a century, had run red with the blood of human sacrifices, leered emptily at the morning light. Crucifix in hand, Fray Olmedo chanted the words of Christian worship over the depopulated heathen capital.

So passed the Empire of the Aztecs, which strutted its short and bloodthirsty life in the borrowed plumes of a mighty culture.

So began the power of Spain in the New World, not ill typified by the two figures at the summit of the War-God's pyramid—a gallant soldier, sword in hand, and a noble friar, holding aloft one of the symbols of the Christian Faith.

CHAPTER XI

THE GREATNESS OF THE INCAS

STUNNING bewilderment and awe! Such are the feelings evoked by the enormous works which still remain of extinct South American civilizations.

Puzzling, indeed, are the problems of the Mound-Builders and the Cliff-Dwellers; the mysteries of the Mayas and the pre-Aztecs tax the brains of the most acute students; yet these pale before the baffling secrets of the pre-Inca megalithic fortresses and palaces.

American history can be traced back two, or even three thousand years in the valley of the Mississippi and in Mexico. But the antiquity of the pre-Inca structures of Peru, Bolivia and Ecuador is greater still. Unhappily, these peoples left no calendar-dating as a clue whereby one might trace their steps into the distant past.

As, in the Great Fraser Midden, North American Man was traced back to the close of the Ice Age, by means of climatic and geological evidence; so, to establish historical foundations in the Andean area, it is necessary to show similar evidence and to trace its effect upon South American Man.

Of all parts of the world, South America has seen the greatest geological changes in recent times. In fact, they are still proceeding. The Andes are still rising. The land to the west is falling. The climate is changing. Even within historic times, well-watered plains have become deserts, sea-beaches have become grassy uplands, cities have been lifted to inaccessible plateaus. Where is now the waterless desert of Tarapaca, there was once a forest inhabited by numberless ant-eaters, forest-dwelling animals, whose skeletons lie on a treeless plain. In Brazil, shell-heaps are found scores of miles inland. Dense and impenetrable jungles, under an almost continuous tropical rainfall, cover lands which in historic times were so arid that they needed irrigation.

Such changes, though they appear rapid from the standard of geological time, are very slow from the standard of historical time. The ancient monoliths found on the coast uplands of Peru reveal an antiquity which cannot be put less than 1000 B. C., or three thousand years ago. (Some scientific workers have even suggested an age of ten thousand years.)

The history of the civilizations on the Pacific Coast of South America may be divided into three eras: the Megalithic Era, in which vast buildings were erected by an unknown "Andean" people, who understood the handling of enormous blocks of stone. The second may be called the pre-Inca Era and deals with that misty transitional period

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between the megalithic remains and the Inca Empire. The third is the Inca Era, and includes those parallel South American civilizations of which nothing is known until their conquest by the Incas, such as the Chanchas and the kingdoms of Quito and Chimu. This era extends until the Spanish conquest.

Mystery piles upon mystery, and wonder upon wonder as modern exploration and research reveal more and yet more of the megalithic ruins of the Andean people.

Below Vilcanota, in Peru, the great chain of the Andes Mts. forks to form the eastern and western Andes, containing some of the loftiest peaks in the New World. Between these two ranges is an extensive and very lofty plateau, over 13,000 feet above the sea, with Lake Titicaca in its center. This is the largest lake in South America and was, formerly, much larger. The surrounding mountains form a region of frost and snow. Hardy llamas and alpacas find food in a coarse grass. Corn will not ripen. Potatoes and other roots alone can be grown. A form of partridge and the giant rat (*viscacha*) are the only game. The lake yields fish, and at certain seasons is frequented by migrant waterfowl. In a word, the possible food-supply of the region barely suffices to keep alive a handful of mountaineers.

Yet on this plateau and on the ancient shores of this lake, perched in the clouds, stand the ruins of an immense city, covering a large area and once

containing hundreds of buildings. The masonry is superb and the engineering skill is staggering. One of the huge stones is 36 ft. long by 7 ft. wide and 7 ft. thick, and weighs 170 tons. Blocks from 50 to 100 tons in weight are numerous. Aside from the monoliths of Ancient Egypt there is nothing to equal this in any part of the world.

"The movement and the placing of such monoliths," says Markham, "point to a dense population, to an organized government, and consequently to a large area under cultivation, with arrangement for the conveyance of supplies from various directions. There must have been an organization combining skill and intelligence with power and administrative ability."

The conclusion seems inevitable that the climate must have been radically different on Lake Titicaca, then, from that which it is at present. Such a change of climate would come were the mountains 3,000 feet lower, though for true fertility and change of air currents, probably the difference would have to be greater still. Judging from the evidences of the slow upheaval, geologists demand a period of three or four thousand years for this change to have occurred. This figure is corroborated by the coastal changes in Chile, by the alteration of the basins of the great rivers of South America, the Amazon, the Orinoco and the La Plata, and by the significant changes of the coast-line of Brazil.

Nor is the wonder of the work of these Andean

builders confined only to the size of the blocks handled. Though these workmen were of the Stone Age, and had nothing but stone tools, the edges of these tremendous blocks are accurately straight, the angles carefully measured, the uprights have mortices and ledges to hold the horizontal slabs, and the fitting of the great blocks would take a modern stone-mason, with steel tools, weeks of time. The carvings are complicated. There were water conduits and a drainage system.

Some of the great slabs—such as the monolithic doorway at Tiahuanaco—are carved with intricate detail. On the upper part of this doorway is a sculptured figure of a deity, with forty-eight other figures kneeling as though in worship. The symbols have not been deciphered. Nor do the ruins at Tiahuanaco alone portray the decorative art of the Andean megalithic-builders. At Ollantaytampu there is carved megalithic work, also at Inca-Misana and Mustatiana. In Cuzco is a megalithic building with a huge monolith known as “the stone of twelve corners.”

In this region the greatest ruin is the Fortress of Cuzco. It consists of three parallel walls, 330 yards in length, each with twenty-one advancing and retiring angles, so that at every point an attack could be enfiladed by defenders. In the outer wall are found stones 14 x 12 and 12 x 8 feet, as well as many which measure 8 x 6 feet. There is nothing to be compared to this wall in any part of the world.



AN INCA MONOLITHIC FIGURE AT
TIAHUANACO.



THE MYSTERY OF THE PACIFIC.
EASTER ISLAND

There is a great similarity between these monoliths that suggest the possible origin of the Inca people in a migration from Asia via the Pacific Islands.



THE GREAT DOORWAY OF TIAHUANACO.

This great slab is carved with intricate detail but as yet the symbols of its decoration have not been deciphered.



A BRIDGE OVER THE APURIMAC.

The great engineering ability of the Incas must have expressed itself in many ways, of which we have little or no record. Their roads and trails point directly to points where such lofty structures must have crossed rivers and valleys to complete their routes of communication.

Among the great symbolic monoliths is the huge Sacrifice Stone of Concacha, which is 20 x 14 x 12 feet. More remarkable still is the Chavin stone, found in the valley of the Marañon, which is 25 feet long, by 2 feet 4 inches. The stone is of diorite and exceedingly hard. The carving of it is extraordinary. It represents the Sun-God. Upon a short body appear many faces, one above another, but upside down. If regarded as the arch of the sky, this design is comprehensible. In ancient stone work in Ecuador, also, this reversed head is seen.

An important corroborating fact is that the lowest layer of pottery found in this area is decorated in the form of the Tiahuanaco doorway and the Chavin Stone. Archeologists claim a date of 5000 B. C. for this early pottery.

A culture which had reached the height of these builders must have existed for centuries. Maize must have been brought from a wild state and cultivated. The llama as a beast of burden and the alpaca as a wool-provider, must have been taken from the wild state and domesticated. It is well known that domestication is a matter of many centuries. Even using the greatest caution, one may surely say that the ancestors of the Andean megalithic builders had reached this continent before the year 2000 B. C.

There is nothing but tradition to indicate the direction whence the megalith builders came. The culture is indigenous, though a certain Mongoloid

character prevails. Tradition points frankly to the south, by at least half a dozen lines of evidence. An Inca writer of historic times calls himself an "Antarctic Indian." Cieza de Leon, the earliest collector of native traditions, says that all peoples declared they came from the south. Two authorities declare that the tribes claim to have come "over the water." The Lamabayeque, a branch of the Chimu, claim actual dates for their immigration, "by rafts with bags for wind."

There is a further reference to Asian origin. While the South American civilizations had a marvelous calculating system, kept by knotted strings of various colors and known as a quipu, they had no writing. Yet, on the hills near Tacna, between Peru and Chile, are graven in the rock hieroglyphs of enormous dimensions, perfectly visible at a considerable distance, written in vertical lines like Chinese writing. (From the description, these resemble Fo-So, an ancient sub-Tibetan script). At eight leagues to the north-west, at Arequipa, may be seen engraved upon granite, on the heights of La Caldera, figures of men and animals, straight and curved lines, parallelograms and even certain kinds of crosses and letters. Time has blotted out a number of inscriptions, but a great many are still sufficiently visible. The situation of these hieroglyphs in solitary spots, devoid of any ruins in their vicinity, or of any tombs corresponding to the Inca civilization, proves that they were carved previous to the Em-

pire, and they are evident signs of the existence of a very ancient civilization.

Whence came these people? There is no incontrovertible theory, but the evidence of Asiatic origin is strong. A line of megalithic structures and monoliths runs clear across the islands of the Pacific.

A speck of land in the ocean, Easter Island faces a vast expanse of sea. Except for its sister islet, Sala-y-Gomez, it is more than a thousand miles from any land, though Peru is the nearest mainland. The island is barren and bleak, without a single tree. Yet, on this desolate rock, one of the most remote and inaccessible points on the globe's surface, stand some of the most wonderful colossal statues in the world, carved in the shape of huge faces. The largest is 68 feet long, its face, alone, being 29 feet high. There are dozens of them fourteen to sixteen feet high. The statues are carved from a hard glassy lava, evidently with a stone chisel. They are crowned with red crowns made from a different stone. Some of them are 250 tons in weight.

Here, too, great quays face the sea, 30 feet high and 200 feet long, made of hewn blocks six feet square. Ruins of huge stone houses also remain. Their origin is an utter mystery, yet both the masonry and the sculptured images are reminiscent of the strange ruined city of Tiahuanaco perched on that plateau of the Andes two miles high above the sea.

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Fourteen hundred miles further to the west, Pitcairn Island rises solitary. Here, too, are statues similar to those at Easter Island. Furthermore, carved stone pillars are seen, which, not being monolithic, remind one of the pillars at Incahuasi in Peru.

In Tahiti, another fourteen hundred miles further on, stands the great pyramid temple of Atahura, 270 feet long, 94 feet wide and 50 feet high, its summit reached by a flight of steps hewn of basalt and coral.

A thousand miles to the north lie the Marquesas Islands, with giant stone figures of Taka-li and where the houses are built on platforms of basalt, all decorated with pictographic glyphs, as yet undeciphered.

In the Tonga Islands, prehistoric buildings are found, made of huge stone blocks, ten tons and more in weight. There is also a wall, similar in every way to the megalithic wall known as the Fortress of Cuzco.

It is in the Caroline Islands, however, that lies perhaps the most amazing of all this line of mysteries. This is "the Venice of the Pacific." At Ponape, nine square miles of wharves and quays of massive stonework form a mighty city of water streets, shrouded, desolate and forgotten. The massive wall which guards this labyrinth of canals is pierced by a gateway thirty feet high. The walls of the main building near the entrance to the harbor form a quadrangle 200 feet on all sides,

with walls from 20 to 40 feet high, and 10 feet thick. Many of the stones of which the wall is built weigh three to four tons, and must have been brought from another island thirty miles away, where alone this stone is found. What canoes must those have been to carry stones of three-ton weight! Or was the Polynesian land-bridge existent in those megalithic times?

The path of marvel goes on to Probolinggo and the rebuilt wonders of Boro-Budur, in Java; to the Passumali monoliths in Sumatra; and, on the mainland, to the forest-engulfed ruins of Angkor-Thom in Cambodia. There, again, is found the terraced and truncated pyramid with a flight of steps running to the summit, made, as in Peru and, later, in Central America, with huge blocks of stone laid together without cement.

The chain is complete. The only great gap is that from Easter Island to South America. But it can be urged that a race able to perform such mighty tasks, a people famous as boatmen, and not afraid to build vessels which could transport heavy monoliths, might easily have crossed the sea eastward from Easter Island. The burden of proof lies, now, on those who wish to disallow the origin of the Andean megalithic race in an Asian center.

Between the megalithic time and the Inca time there is a shadowy transitional period. In this, almost the only gleam of historical light is a list of ninety-two Peruvian rulers given in the writ-

ings of Montesinos, a Spaniard, who resided in Peru when the personal companions of the last of the Inca emperors were still alive. Montesinos was not a critical historian, and his list has been much disputed. Recent research, however, endorses much of his information, and, failing evidence to the contrary, it may be taken as a basis for the history of the Traditional Period.

Of the ninety-three rulers listed, Montesinos gives the lengths of the reigns of sixty-five of them. Of the twenty-five not given, he mentions the ages of nine. Reckoning on a basis of averages with other kings in the list, the length of each of these non-determined reigns may be estimated at 20 years. This is not exact, but it is a conservative approximation.

Thus, early Peruvian history, from the first traditional king to the death of the last Inca under the Spanish Conquest, may be divided into four "dynasties." These would be as follows: Pirau Kings, 1400-830 B. C.; Amauta Kings, 830 B. C.-333 A. D.; Tampu-Tocco Kings, 333-1100; Inca Emperors, 1100-1571. The Pirau Kings may, or may not, have been rulers in megalithic times; probably, they were. If Montesinos secured this list from Blas Valera, who took it from the Inca records in quipu or knotted string, it is likely to have a high degree of accuracy.

The name of the Supreme God, which appears at the head of this list of kings is given as Illa Tici Uira-cocha. These three words have the

meanings of "light," "creation" and "ocean." The root 'l' (as in Illa) is the distinguishing root either for "god," "light" or "divine protection" in most Asian tongues. Thus: Melanesian, "leo"; Javan, "sulu"; Samoan, "susula"; Malay, "ta-alla"; Chinese, "liang"; Sabeian, "illa"; Arabic, "allah" (really al illah); Phoenician, "el-y-on"; and Hebrew, "el". Philological arguments are dangerous unless a large number of roots show similarities, but this may be added as another small point to the growing mass of evidence in favor of the Polynesian origin of the Andean peoples.

Nor is the name of the deity merely a philological question, for the symbols of the deity, in the carvings on the megalithic stone monuments, deal with these three meanings. Thus the god is surrounded with sun rays (light) the points of which alternate with puma heads (symbols of the animal creation) and in which the fish motive (symbol of the ocean) appears. There is, therefore, a historical relation between the lists of kings and the sculpturing on the monolithic doorway at Tiacuananco.

Of the eighteen names of kings which appear in the list of the Pirua dynasty, two are called "Pachacuti"—which means "reformer of the calendar." This reveals an early period of culture, when the priesthood was still groping for some means of accurately determining time. The other titles appear to refer to the characters of the kings. Three

of the personal names have no relation to any of the Inca tongues and are believed to be archaic words from the language of megalithic times.

The second division is known as the Amauta period, or dynasty, because there appear thirteen out of the forty-six kings who are given this title. The word Amauta corresponds closely in meaning to the word "Magi" or "Wise Man," part priest, part historian, part astronomer. Yahuar Huquiz, the thirty-third monarch of the Amauta dynasty, gave his name to the five intercalary days which, finally, regulated the solar year. This would be about the year 30 A. D.

The end of the early civilization is stated to have been the result of an invasion of a warlike people from the south, the decisive battle being fought in 333 A. D. at Pucara where Titu Yupanqui Pachacuti VI was slain. The new-comers, while able warriors, had no idea of social government. They were not able to make any use of the Amauta culture, could not worship the gods and could not be taught the use of the calendar. The country broke up into tribes and barbarism returned. A remnant of the Amautas, however, managed to escape to a district called Tampu-Tocco (house with windows) where the old Amauta traditions were preserved, and where the Children of the Sun maintained the heritage of the old civilization.

This old site of Tampu-Tocco, of which nothing was known but a reference in an ancient legend, was discovered by the Yale Peruvian Expedition

in 1911 and thoroughly explored in 1912. Known as Manchu Piccu, this site is the most important, historically, of all early Inca cities. It belongs partly to the megalithic and partly to the Inca type. It has never been pillaged for local building material, since it lies on a mountain ridge, far removed from any human dwelling.

This huge fortress city of white granite, looming serenely on the summit of inaccessible cliffs, large enough to have terraced fields, irrigation canals, houses for hundreds of people, palaces and temples, has been seen by only a few white men. "It is," says Hiram Bingham, its discoverer, "essentially a city of refuge. It is perched on a mountain top in the most inaccessible corner of the most inaccessible section of the Urubamba River. There is no part of the Andes that has been better defended by nature.

"A stupendous cañon, where the principal rock is granite, and where the precipices are frequently over 1,000 feet sheer, presents difficulties of attack and facilities of defense second to none. Here, on a narrow ridge, flanked on all sides by precipitous cliffs, a highly civilized people,—artistic, inventive and capable of sustained endeavor—at some time in the remote past built themselves a city of refuge." There was a double wall, built at the very edge of the precipice, a dry moat and signal towers.

Among the megalithic buildings is one of 25 x 21 feet, composed entirely of large blocks of white

granite. Around what has been called the Sacred Plaza are buildings on every side. Directly below the Sacred Plaza, the terraces run down to a large horse-shoe-shaped plaza, either an ancient playground or a pasture. On the other side of this are many small houses, huddled closely together, a story and a half high, with gabled ends. Nearly all have niches for beams to support the roof, which evidently was of wood.

"A few," says the discoverer, "are of remarkably fine workmanship, as fine as anything in Cuzco. The material used is nearly uniformly white granite. The finish is exquisite and the blocks are fitted together with a nicety that surpasses description. In places the ruins are almost labyrinthine.

"On the north side of the Sacred Plaza is another structure, the side facing the plaza being open. Outside the building are huge cylindrical stones projecting from the wall. Huge stones were employed in building the lower tier. This structure has an internal measurement of 14 x 33 feet. Its most striking feature is its row of remarkable windows. Three large windows, 3 feet wide and nearly 4 feet high, are let into the back wall and look out upon a magnificent prospect over the jungle-clad mountains."

These three windows, which appear in this building and nowhere else in Peru, inevitably suggest Tampu-Tocco. Certainly this region was where the refugee Amautas fled, certainly the

building is more megalithic than at any other Inca site, certainly the Temple of Three Windows suggests the name. And, as though to crown all, the myth of the departure of the Amautas from Tampu-Tocco speaks of their "passing through the hill with three windows."

The first settlement of the fugitives at Tampu-Tocco or Manchu-Piccu was in 333 A. D. But the remnant of the people was small. To erect a city of such vast buildings as Manchu-Piccu must have taken many centuries. It has been suggested that this refuge city in the mountains became a sacred city, under the guidance of the priests. The fields within the walls were large enough for crops, the mountain forests provided game. An irrigation ditch brought water from a distant hillside and there were several springs inside the enclosure.

Marriages were strictly tribal. There was no communication with the outside world. In its isolation, Tampu-Tocco or Manchu-Piccu became forgotten. Its enemies never attacked it. For seven hundred years it lived its peaceful life in the hills, ever building and adding to its defenses, happy, well-governed and content.

Then, in the year 1011, when Ayar Manco was king, through "the three windows," the people of Tampu-Tocco, now grown strong enough to meet any foes, decided to go down to fertile lands. Manco was the oldest of the four children of the Sun, and, the legend states, it was his ambition

which resented perpetual seclusion on this mountain top.

The march of the ten tribes was slow. At the first fertile place they settled down and tilled the ground, probably returning to Tampu-Tocco for religious festivals. Manco and his three brothers led the migration, which lasted over a period of 89 years. It was probably about 1100 that they found themselves in the fertile valley of Cuzco, dominated by the imposing hill of Sacsahuaman on which had been built the great megalithic fortress, at least a thousand years before.

The rulers of the tribes who had left the "three windows" halted in this valley. The followers of Manco built first the House of the Sun at Inti-Cancha, more as fortress than temple. The ten tribes from Tampu-Tocco rapidly spread over the surrounding country and the kings of Inti-Cancha ruled over a loose confederacy. They had gained agricultural riches and a more genial climate, but there is no doubt that the sacerdotal and royal dignity of the monarchs had diminished.

A different legend states that a Daughter of the Sun, Mama Huaco, was sent by the celestial powers to civilize the rude Indian tribes. Though a virgin, she gave birth to a son, and brought him up on an island in Lake Titicaca, near Tiahuanaco. Later she also gave birth to a daughter, the legend stating that the Sun was the father of the girl. When the son and daughter became old enough to marry, they were wed, and from them sprang the

line of the Incas, the Children of the Sun. The name of this first Inca was Manco Capac, the "Almighty Child." By a divine order he settled in the Valley of Cuzco and built the House of the Sun at Inti-Cancha. This ruler corresponds to Ayar Manco, the 20th king of the Amauta dynasty in Montesino's list, he who led the tribes from the "three windows."

The lists of Inca emperors vary slightly. There is good historical foundation for the enumeration of eighteen, beginning about 1100 and continuing until 1571.

Manco Capac and his two immediate successors, Sinchi Rocca and Lloque Yupanqui, gave all their powers to consolidating the domain around Cuzco. Conquests over the neighboring small tribes were effected, and nobles of the Children of the Sun became the tribal chiefs of these alien tribes.

The principal enemies of the Incas, at this time, were the Allcovisas, but Mayta Capac, the fourth Emperor, rallied to his standard all the small tribes which had now come under his dominion and, after a life and death struggle, the Allcovisas were vanquished. The whole plateau of Cuzco thus became Inca land, and as that plateau dominates the valleys which descend therefrom through mountain passes on either side, the territorial nucleus of the empire was formed.

It was a characteristic of the Incas that they gave their attention mainly to administration and government. It has been said that no country in

the history of the world—not even the republics and democracies of today—had so excellent a governmental system as the Incas. The land belonged to the state, and work on it was done according to the age and strength of each individual, yet each family had a measure of land assigned to it for which it was responsible. Communal work on the lands of widows, sick people, and priests had to be done first; a governor was hanged during the reign of the fourth Inca, for allowing the fields of a friend to be tilled before that of a poor widow. Not a spot of cultivatable land was neglected, and, for this reason, the cities were built on rocky heights. The mountains were terraced. The dry plains were irrigated.

Interstate commerce was regulated and lack of any necessity in any family was visited with punishment on the local chief. Colonies were established in the forests. Lumbering, stone-cutting, building and so forth, were paid in terms of food and wool. There was no profiteering. Political and social economy was the chief work of the nobles, and all production paid a small proportion into the coffers of the state, so that there was always a surplus.

No money was necessary, for every family had a right to everything necessary for the nourishment and well-being of its members. The system precluded graft. In case of a local disaster, all the other tribes gave willing assistance. Everyone worked, and worked very hard. Yet provision was

made for days of rest, days of religious festival and days of recreation. Some of the dramatic literature of the Incas still survives. Crimes were rare, but the punishments were exceedingly severe. Idleness was reckoned as a crime, and continued idleness was punishable with death.

Much of this system seems to correspond to that type of administration which is—somewhat vaguely—called socialism. In truth, it was not so. It is both a historical and a political error to speak of the Incas as socialistic. On the contrary, the Emperors regarded themselves as “Children of the Sun” and semi-divine. Their rule, while beneficent, was autocratic. They took their power from their fabulous heredity, not from the voice of the people. Neighboring tribes were conquered, not admitted to the freedoms of Inca administration because of a recognition of equality. The ruthless war on the Kingdom of Quito shows this clearly.

The Inca Empire was one of beneficent despotism, but so admirably organized that, even after the conquest, and when the Spaniards had slain all the guiding heads, the machine still worked smoothly on. Few things annoyed the Spaniards more than to find that, after the army of the Conquistadores had passed, sacking houses and destroying growing crops, Inca economists went from place to place, estimating the damage done and sending people from other sections to minimize the loss.

The conquest of the Allcovisas gave supremacy,

indeed, but the Early Inca Empire was still surrounded by enemies. To the north were the civilized people of the land of the Chimu and the Caras under the Shiri of Quito, besides the populous valleys of Jauja and of Huaylas, filled with warlike tribes. To the west were the Chancas, Yuncas and the various peoples of the coast valleys. To the south lay the Auracanian, who had developed a solid military organization of their own. To the east were the Antis and the savages of the Amazonian forests.

As one of the unwritten laws of the Incas was that each ruler should conquer at least one tribe and bring it into subjection, the next three Incas, Capac, Yupanqui, Yuca Rocca, and Yahuar Huacac, extended the Inca power steadily. It was during their reigns that the laws of the Incas were codified. A few of these may be of interest.

There was a municipal law, rigid and yet elastic, providing for the administration of towns and villages in such wise that tribes which had not attained to the Inca standard had regulations of their own; an agrarian law, dealing with the exact measurement and apportionment of land; a common law, compelling each person, except children, the aged and the infirm, to do a fair quota of labor on public works, such as temples, palaces, bridges, roads, canals; a fraternal law, by which the inhabitants of all villages were compelled to help each other in times of harvest, or of building, and whereby all villages were compelled to join in



SACAHUAMAN FORTRESS AT CUZCO.

The hill on which this fortress stood, overlooking the city, was practically inaccessible on two sides and easily defended on another. The fortress consists of three parallel walls, each of three hundred and thirty yards in length with twenty-one advancing and retiring angles, each so that at every point an attack could be enfiladed by defenders.



A SALIENT ANGLE OF SACAIIUAMAN FORTRESS.

Though these great walls were built by workman of the stone age, with nothing but stone tools, the edges of these tremendous blocks are accurately straight, the angles carefully measured, the mortices and supporting ledges carefully fitted. The culture which reached the height of these stone age masons must have existed for many centuries.

the event of disaster, such as flood or storm; a law against extravagance in dress and living and forbidding the hoarding of anything; a law against overwork, providing for several feasts or holidays in each month and devised in such a way that friendliness and neighborliness were conserved; and a law against idleness which was so accurately drawn that even the sick and weakling, the blind and lame, were apportioned light tasks suited to their capacity.

Military laws also provided that the gods of all conquered tribes were to be respected, that the ruler and some of the chief families of such tribes were to be guests in the Inca capital and their children should attend Inca schools, and that the benefits of Inca communalty should be extended to barbarous communities for a term of years while the newly-made citizens were gradually accustoming themselves to their new obligations.

The road-building of the Inca empire—which would more accurately be termed trail-building—was of great extent. From the city of Cuzco ran two main roads, each of them over 1,000 miles long. One of these ran over the coastal plains, the other over the tops of the mountains. Hundreds of bridges were built, and frequently the trail was hewn out of the side of a mountain. There was little grading. The trails were designed exclusively for traffic by that slow beast of burden, the llama, and for the postal system. This latter was handled by relays of runners, each

runner taking a message for a distance of five miles. Despite the steepness of the paths, an average was kept up of ten miles an hour, or 240 miles in a day.

The successor to Yahuar Huaccac was Huira-Cocha the Great, the first of the true Inca conquerors, who came to the throne about 1380. The Inca Empire by that time was fully established, its laws codified, its peoples organized. Huira-Cocha commenced his reign of conquest by the subjugation of the tribes of the Collao, who still held the valley of Tiahuanaco, supposedly the seat of Inca origin. While the records do not show any decisive battles, the size of the enormous army which Huira-Cocha prepared suggests determined resistance. He defeated successively the Collas, the Lupacas, the Pacasas and the Urus, and built a marvelous palace on the island of Titicaca, near the megalithic ruins of Tiahuanaco. He also swept victoriously down the eastern slope of the Andes, conquering tribes too numerous to mention. Four other great palaces testify to the expansion of this conqueror's reign. When he died, the Inca power extended far to the north, south and east, but was bounded to the westward by the deep gorge of the Apurimac River, on the other side of which lay the rival power of the Chancas.

The Chancas were scarcely less numerous than the Incas and more warlike, though their civilization seems to have been imitative and their confederacy a loose one. At least seven strong tribes

acknowledged the leadership of the Chancas. The natural defenses of their land made invasion almost impossible. Huira-Cocha was aware that, sooner or later, the issue between the two great powers must be fought out, but, as he was growing old, he left the work of conquest to his son, Urco.

Then, to the enormous surprise of the Incas, the Chancas took the initiative. On the death of Huira-Cocha, they assembled an army and began to nibble at the outskirts of the empire. Finding that Urco did not avenge these raids, they grew bold, and crossed the Apurimac River. Urco put his faith in divine intervention and did nothing. According to some accounts, he fled.

But, when the enemy was actually in the outskirts of Cuzco, Urco's younger brother, Cusi, seized the generalship. With a hundred men he fell on the advance guard by surprise. Single-handed he cut his way to the enemy's center and captured their standard and the statue of their god. Dismayed, the Chancas fell back. At this repulse, the Incas rallied. As soon as they saw the tide of victory turning, allies rushed to Cusi's aid from the hills near by.

Marshalling these hastily gathered forces, Cusi drove forward and met the Chancas on the heights above Cuzco. Both the position and the preparedness gave the invaders the advantage, but the loss of their standard and their god made many of their leaders faint-hearted. The odds in favor of the Chancas were so astounding that when they

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saw Cusi advance, they were convinced he must have magic on his side or he would never dare so bold an effort. Cusi, on his part, absolutely convinced of his divine birth as a Child of the Sun, inspired courage and confidence in his small army. The issue hung in doubt for some hours, but, at last, Cusi drove back his foes.

Crying aloud that the Sun would never set until the victory was complete, Cusi pursued the retreating army. A second battle was fought on the plains of Sacsahuana, and the Chancas were routed and slaughtered by thousands. Only a pitiful remnant managed to make its way back across the gorge of the Apurimac.

Urco was deposed, and Cusi became emperor with the additional title of "Pachachuti," being the sixth thus entitled "the Great." He rested not until he had crossed the Apurimac, himself, and brought the principal tribes of the Chanca confederacy under his sway. Thus, with the elimination of its rivals, the Inca Empire grew greater still.

Conquest begets the desire for conquest, and Cusi's son, Tupac Ina Yupanqui, became an even greater conqueror than his father. He finished the subjugation of the Chancas and brought all the coast peoples into subjection, including those mysterious civilized peoples who built the temples of Rimac and Pachamac, and also those who constructed the famous irrigation system—including rock-piercing tunnels—in the valley of Nasca. He

further began the conquests of the two northern civilizations, that on the coast, ruled by the Great Chimu, and that of the Caras, ruled by the Shiri of Quito.

These various campaigns to the north took the Inca armies many years, and there is no campaign in history which reveals higher generalship. Through apparently impenetrable forests and over precipitous mountains the army cut a road and paved it with stone. It established commissariat posts on a line of communication a thousand miles long, and maintained for decades a system of food transportation for a force of fifty thousand men. Great chasms were spanned with bridges. Fertile sections were cultivated and local colonies established for the forwarding of food.

Perhaps the most amazing of all the incidents in the conquest was the defeat of the maritime and river tribes of Chonos. These great canoe-builders confronted the Inca army on the further side of the Guayaquil. Tupac marched down to the mouth, where the river becomes like an arm of the sea. The Chonos swarmed on the water.

The Incas had never built a boat, but the general ordered the capture of some of the enemy canoes. He studied them, directed his men to build hundreds like them, drilled his troops in the use of them, and, after two years of preparation, gave battle to the Chonos and defeated them and their allies in a brief series of engagements. The immediate result of this victory was that the great

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provinces of Mantas and Esmeraldas sent in their allegiance, thus pushing Inca territory almost to Panama. The Chibchas of Colombia never yielded.

One of the most important features of this northern conquest was the subjection of the Great Chimu, which may be dated about 1435.

Here, again, the historian stumbles against a problem. Nothing, absolutely nothing, is known of the early history of the peoples ruled by the Chimu. A legend of one of the sub-tribes tells that they came to the country in boats. Yet, when the Incas attacked the Chimu in the fifteenth century, that monarch ruled over a civilization of vast extent and importance.

In a fertile plain, ninety miles long from south to north, bounded on one side by the Andes and on the other by the Pacific Ocean, with the River Barrancas as its southern frontier, lay the city of the Chimu, surrounded by highly cultivated land supporting a dense population. The irrigation system was marvelous. An aqueduct took the water of the Muchi River, far in the mountains, and carried it across the plain on a lofty embankment of stones and earth sixty feet high, the channel being lined with stone.

The city contained scores of buildings and many mounds or pyramids. One of these covers an area of 500 square feet, and is 150 feet high. Another, of slightly lesser size, was excavated by the Spaniards in 1577 and from it was taken over \$3,600,000

in gold. Altogether, the Spaniards took \$26,500,-000 in gold from the district around the great City of Chimu. The "Grand Treasure" has not yet been found.

The principal palace was 100 x 52 feet, with walls exquisitely covered with an intricate series of arabesques. The art designs are of a highly advanced pattern. Near by are the ruins of three "factories" apparently used by the workers in gold and metal, the weavers and dyers, and the pottery-makers and painters. In no other primitive civilization has industrialism of such height been found.

The city must have been of extraordinary beauty. Every yard of it was terraced. The buildings were constructed with sharply pitched roofs, and every house was decorated and painted. Water was led in little rills through the streets, which were overhung with balconies. Algaroba trees were planted everywhere to give shade. Flower gardens were large. Nowhere in the world was there a primitive race which had devoted so much care to horticulture as the peoples under the rule of the Chimu.

Not a vestige of historical tradition has come down of the origin of Chimu culture. The civilization shows that it developed steadily, untouched by any outside contact for many centuries. The Temple of the Moon and some features of the pyramids are reminiscent of Mayan work. Modern research in the Chimu ruins emphasizes the theory

that both Chimu and Maya culture are from the same, or a related stock, which separated before either had developed its indigenous civilization. Both cultures may have had a common foreshadowing of civilization in their primal home in Asia.

The prehistoric cultures of Ecuador are even deeper mysteries. Of these there are five different cultures: Imbabura, Puruha, Cara, Canyari and Manabi. The most interesting remains, archeologically, are those of the people of Manabi, and the tribes of the greatest historic interest are the Caras and Canyaris, who, later, formed the Kingdom of Quito, a civilization almost as great as that of Chimu.

In the province of Manabi, in Ecuador, are the ruins of a people whose very name has vanished. The first historic inhabitants called them "the giants." The principal remains are stone seats, and they suggest sitters of more than ordinary size. In this province lie the ruins of Jocay, with scores of houses, many of them containing two to seven rooms. One building was 190 x 30 feet inside measurement. The wall-building was rough and clumsy. Sculpture and pottery is archaic. Only one expedition has visited this region and an enormous amount of archeological work remains to be done. There are reasons to link the people of Manabi to the Mayas on the one hand and to the South Sea Islanders on the other.

The Caras are said to have occupied Manabi,

and tradition states that, in the Seventh Century, they had a city there. Whoever these ancestral Caras may have been, they separated, one group going to Atacames and Esmeraldes in the north, the second seeking the highlands of the interior by passing up the river valleys towards Quito. There they found a people known to tradition as the Quitus, whom they defeated in the year 980 A. D. On a hill near Quito the Caras erected a temple to the Sun and Moon, and the evidence seems to show that they possessed the same astronomical system as the Incas, but in a ruder fashion. Together with the Scyris the Caras were extraordinary lapidaries, though poor architects. They excelled in the cutting of emeralds.

With the defeat of the Quitus, the kingdom or confederacy of the Caras began. The king was called "Shiri." After eleven Shiri had reigned peacefully, the male line came to an end. Princess Toa, daughter of Shiri XI, married the governor of the principal province, who thus in the year 1300, became Shiri XII. He reigned for 70 years and his son Shiri XIII came to the throne in 1370. Under this reign the Cara kingdom spread, even the Canyaris and some northern maritime peoples yielding a willing alliance.

In 1430 Shiri XIV came to the throne, and soon after, the pressure of the Inca power began to make itself felt. The Chimú had been conquered in 1435 and various coast peoples at dates earlier and later. When the Chonos were defeated

at the River Guayaquil, an event followed by the submission of the Mantas and Esmeraldes, the Shiri of the Caras at Quito realized that his own crown was in peril.

The Incas commenced their inexorable march upon Quito in 1450. Owing to the inaccessibility of the country, progress was slow, but first under Tupac Yupanqui and then under his successor, Huayna Capac, the Incas pushed further and ever further. In 1460 Tupac captured the important southern fortress of Mocha, the key to all the lower Cara valleys, and retired to Cuzco, leaving Huayna Capac in command. Shiri XIII, exhausted from the long campaign and dispirited by defeat, died in 1463.

The great Inca conqueror, Tupac Yupanqui, died in 1474. After the year of mourning, Huayna Capac set forth to complete the conquest of Quito. The campaign lasted for three years, the Shiri passing from stronghold to stronghold, until, in 1478, the Incas besieged the famous Hutantaqui fortress in which the last reigning king of Quito had taken refuge. The Caranquis, allies of the Caras, came to the rescue, but the Inca army defeated both the opposing armies on the field of Hutantaqui, and in this vale, overlooked by Andean snows and volcanoes, the Incas won the final laurel in their crown of empire.

In this campaign, Huayna Capac had taken with him his illegitimate son Atahualpa, leaving his son Huascar, heir to the Inca Empire, in Cuzco. The

Emperor occasionally visited Cuzco, but, as he drew towards old age, he preferred to live at Quito. The conquered Cara and Caranqui tribes were ever ready to revolt, and military operations could better be directed from the northern capital. Atahualpa secured a thorough military training under his father, who closed a long and victorious career in 1525.

Huascar was at once proclaimed the Inca Emperor, but his half-brother Atahualpa refused to leave Quito to do him homage at Cuzco. Instead, he summoned the Caras and Caranquis to his standard. Huascar sent first one, then another and finally a third army against Atahualpa, but a country which had defied the great Tupac Yupanqui for 28 years, could well defend itself under so able a military leader as Atahualpa. The three Inca armies were smashed, one after another.

Seeing that all his father's conquests were slipping from his scepter, Huascar started from Cuzco himself, with a fourth and immense army, in 1527. Progress was slow, for Atahualpa disputed his brother's advance, far south of the southern border of the kingdom of Quito, and, in that almost inaccessible country of Andean peaks and cañons, defense is easy. Finally, after Huascar had been fighting vainly for four years, Atahualpa's generals secured a decisive victory in 1531 and Huascar was captured.

It was while the Inca Empire was in this fratri-

cial and disrupted state that the Spaniards appeared.

The Spanish conquest of Peru, owing to the divided state of the country, was not a matter of great difficulty. Pizarro's work is not comparable to that of Cortés in Mexico. Francisco Pizarro was an humble soldier of poor parentage who had come to Darien with de Hojeda in 1509 and who, by reason of faithful service, had received a small grant of land in the new city of Panama in 1519. Three years later, de Andagoya, Inspector-General for the Isthmus, heard vague tidings of the Empire of the Incas. Being ill, and unable to undertake an expedition in person, the Governor of Panama permitted him to hand over the enterprise to whomsoever he willed. De Andagoya, knowing Pizarro by repute as a valiant and level-headed soldier, chose him—together with Almagro and a friar named Luqué—to make a reconnaissance. They set sail in 1524, but failed to make a suitable landing before the provisions gave out, and so returned.

Next year, Pizarro could find no one to finance the expedition, but, in 1526, the Mayor of Panama advanced funds, and Pizarro set sail again. Soon after rounding Cape Passado, believing himself the only craft on that strange ocean, what should the Spanish adventurer see in the distance but a sail! It proved to be a Peruvian sailing raft, laden with merchandise, with balances for weighing gold and silver, with cotton and woolen cloths,

with silver work and pottery. The raft was on its way to trade with northern tribes. The raftsmen gave the Spaniards full information about Cuzco and the Incas.

A landing soon showed that the country was far too well organized to be conquered by a handful of men. Pizarro and a few men stayed at the island of Gallo, where they could defend themselves if necessary, and Almagro returned to Panama for reinforcements.

One of the men who had stayed behind sent a treasonable message against Pizarro, and, for some months, the governor of Panama sent him no provisions. Pizarro and his men almost starved to death. At last fearing that he might be punished if the Spanish leader died, the governor sent a small vessel which rescued Pizarro and in which he explored the coast as far as Guayaquil. Thence he went to Tumbez, which he found to be a well-built and a rich city. The Spaniards were hospitably and courteously treated, and Pizarro saw about him such evidence of riches that he became convinced that, if he could be given an army, he would be able to add a mighty empire to the crown of Spain.

He sailed for Madrid, and, after some weary delays, in 1529 succeeded in getting the necessary authority. He was to capture the riches of Peru for the crown of Castile with an army of 250 men. A fifth of all gold found was to go to the crown. Pizarro was appointed Adelanto, or Governor;

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Almagro received the title of Marshal, and Luqué was to be Bishop of Tumbez. The expedition sailed for Central America in 1530. By January, 1531, the Spaniards had crossed the isthmus on foot and set sail on the Pacific. They first reached Puná, in the Gulf of Guayaquil. There they were joined by two vessels under Hernando de Soto. Thence Pizarro, with three vessels, dropped anchor before Tumbez.

From Tumbez the party marched inland. Everywhere they were kindly received. An envoy arrived from Atahualpa, expressing a desire to see the Spaniards. Pizarro agreed, though he had no intention of returning kindness for kindness. He had determined to seize the person of Atahualpa and hold him as hostage.

The great day of meeting came at last. Atahualpa arrived, in a litter, encircled by a glittering court and surrounded by an immense army.

Risking all on one venturesome blow, Pizarro gave the word for all the cannons to be fired point blank into the crowd. Musketry volleys were poured in at close range. The unarmored Indians fell by thousands and fled, pursued by musket-shots, and terror-stricken by the "thunder-and-lightning death." Not an attempt was made to fight. Atahualpa was dragged from his litter.

Fearing that the Spaniards might make an alliance with Huascar, who had been captured only a few days before and had not reached Quito,

Atahualpa sent secret word that Huascar, the true Emperor, should be assassinated. This was done. Pizarro, seizing the opportunity, gave Atahualpa a mock trial, condemned him to death, and had him strangled in the courtyard.

Several efforts were made by the Incas to throw off the yoke of the Spaniards, all without success. One desperate effort indeed was made to recapture Cuzco after the Spaniards had taken it. The Inca warriors secured possession of the old megalithic fort commanding the city. But Pizarro's brother led a gallant company against those immovable walls, defended by the undaunted Inca warriors. There, in hand-to-hand fight, the chivalry of Spain made good their courage. The fort was taken and an Inca chief who had directed its defense threw himself from the wall down a precipice rather than fall into the hands of the invader.

The next Inca Emperor to assume the dwindling regal state was Manco. But the Spanish hold was too strong. After a vain effort to secure his power as well as his crown, he fled to the wild country of Vilcapampa. There, indeed, he was safe from pursuit.

Meanwhile, the quarrel between Pizarro and Almagro, which had begun on the island of Gallo, reached a point of open war, which raged for many years. Finally Almagro was captured by Pizarro's brother and strangled to death in prison as a rebel in 1538. Three years later, in 1541,

Pizarro himself was assassinated by men who had been followers of Almagro and who had thirsted to avenge their leader's death.

The new Spanish governor, Caca de Cestro, arrived soon after Pizarro's death. In the early years of his coming, Manco, the Inca Emperor, died, and Sayri Tupac held nominal rule in his place. The young Inca was persuaded to put himself under Spanish protection and was baptized. Some years later he married a granddaughter of Huascar, but did not long survive, dying in 1560.

On the death of Sayri Tupac, his brother Titu Cusi Yupanqui was acclaimed Emperor. His was a very different character, and there was no pliancy to the Spaniards in his make-up. True, he attended the ceremony of inducting the new governor, Francisco de Toledo, a relative of the murderous Duke of Alba. The Emperor was so impressed by the ceremonies that he sent envoys to Cuzco, asking that friars be sent him to instruct him in the Christian religion. Two friars were sent, but, as it chanced, the Child of the Sun fell mortally ill soon after. The Christian priests were unable to cure him, hence they were accused of murder by magic, and put to death. Another envoy was sent by the Spanish, before the news of the Inca Emperor's death had reached Cuzco, and he, also, was summarily executed.

The younger brother, Tupac Amaru, who was then twenty-five years old, but who had spent all

his life as a semi-prisoner in the Temple of the Sun, now was acclaimed the Sovereign Inca. But his power came at an unhappy time. Toledo, raging like a wild beast at the murder of the friars, set out upon the conquest of the wild province of Vilcacampa. The Spanish army was strongly equipped with light field pieces and soon battered down all Inca resistance. The young Inca Emperor fled but was captured. His captors dressed him in his royal robes, put a rope around his neck and brought him back in ignoble triumph to Cuzco.

The trial, as ordered by Toledo, was little more than a farce. The sentence reached was that the Inca Emperor should be beheaded and all his chiefs hanged. The clergy and all the better class of Spaniards urged that the Emperor should be spared. But Toledo was insatiate. A scaffold was erected, which Tupac Amaru ascended with a firm tread. Then the last Child of the Sun was thrown on his back, seized and held by soldiers and his head severed with a knife.

Thus ended the famous Empire of the Inca. Certainly never, in the history of the world, did a race whose origins were those of savagery rise to a line of such wise and capable sovereigns, ruling a great empire in peace and plenty. It would have been well for that great and rich land over which Spain ruled so long if it could be said that the Christian conquerors governed as wisely as the heathens they overthrew.

And, when it is said of the South American

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Republics that the larger part of their populations is Indian, let it be remembered that an Indian people raised aloft one of the most beneficent empires the world has ever seen.

CHAPTER XII

THE NORTH AMERICAN INDIANS

THE title "North American Indian" is confusing, if it be taken to mean a single race. Neither in color, skull-form, language nor culture do the Indian peoples agree together. They are undoubtedly of the Yellow Branch of the Human Family, and there is a certain "psychic unity" by which they may be distinguished from all other peoples of the world, but this is as far as uniformity can be carried.

Language is one of the best means of tracing racial relationships. Yet it fails on this continent. There are 58 distinct linguistic stocks among the Indians of the North American continent, a veritable Babel of tongues. Moreover, each of these linguistic families is divided among groups of tribes—few of which can understand the speech of their neighbors—and the tribal languages themselves are sub-divided into innumerable dialects.

Culture—including religion, legends, customs, weapons, tools, buildings, foods, and the like—is another valuable basis for divisional grouping. In North America the cultural types are extraordinarily complicated, owing to the size and variety

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of the continent, the varying climatic and faunal types which are found in the different parts of it, and the migratory movements of the earlier peoples. For convenience, 19 areas of differing material culture have been established.

Any understanding or appreciation of the North American Indian, as he existed at the time of the discovery of the continent of America, must be based upon these two factors of language and culture. The linguistic question may be considered, first.

While there are 58 linguistic stocks, entirely separate and distinct from each other, 8 of these cover more than ninety per cent of the continental area, the remaining 50 being either crowded along the coast lands, mainly between the Rocky Mountains and the Pacific shore, or else occurring as small linguistic islands in areas of populous stocks.

The Eskimauan Family occupied the Arctic Ocean coast lands. It is divided into two groups, the Eskimo and the Aleut. The American Eskimo are subdivided into eight sub-groups, the subdivisions being mainly geographical. There is a close kinship with the Yuit in Siberia.

The Athapascan Family occupied all northwestern Canada and the interior of Alaska, impinging on Eskimo territory. But it also occupied an enormous territory in the Southwest, including the western third of Arizona, nearly all of New Mexico (except for the pueblo settlements) and a slice

of southwestern Texas and northeastern Mexico. There was also a small Athapascan group on the Pacific Coast. It was originally the most widely extended of all Indian stocks. The Northern Division or Tinneh, includes three groups, embracing the Yellow-knives and Dog-ribs of the Mackenzie, the Kutchin and Ahtena of the Peace and Copper Rivers, the Babine, Carriers and Tsilkotin in the Fraser River country. The small Pacific division occupied the coast-lands of southern Oregon, with small off-shoots in Washington and California; of this group the Hupa is the best known tribe. The great southwestern division includes the Navaho and the Apache.

Of almost equal expanse was the Algonquian Family occupying all middle western and eastern Canada (except for a small salient of northern Siouan in Saskatchewan) all the Great Lakes region and southwards, including Michigan, Wisconsin, Iowa, Illinois, Indiana and Kentucky, Newfoundland, the Canadian Maritime Provinces and all the Atlantic coast states, east of the Alleghanies, as far as South Carolina. The Western division on the eastern slope of the Rocky Mountains, includes the Blackfoot Confederacy (Siksika, Painah and Piegan), and Arapaho and the Cheyenne. The northern division, north of the Great Lakes and the St. Lawrence, includes the Chippewa group (Cree, Ottawa and Chippewa) and the Algonkin group (Nipissing, Temiscaming and Algonkin). The northeastern division, occu-

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pying eastern Quebec, the Maritime provinces and Maine, included the Montagnais group (Nacaspée, Montagnais and Papinachois) and the Abnaki group (Micmac, Malecite, Pasamaquoddy, Penobscot). The central division, in the Middle States, includes the Menominee, the Sauk group (Sauk, Fox and Kickapoo), the Mascouten, Pottawatomi, and the Miami group (Peoria, Kaskaskia, Cahokia and Michicamea, the Miami and Piankashaw). The Eastern division, along the Atlantic coast, includes such confederacies and groups as the Pennacook, Massachuset, Narraganset, Nipmuc, Montauk, Mohegan, Mahican, Delaware, Shawnee, Nanticoke, Powhatan and Pamlico.

The Iroquoian Family was enclosed almost on all sides by the Algonquian. Its range was along the Alleghanies northwards from western Tennessee, but spread also to include Ohio, Pennsylvania and western New York, the shores of Lake Erie and Ontario and the St. Lawrence River Valley. There was also a southern offshoot in South Carolina. It includes the Huron group, the Tionontati or Tobacco nation, the Attiwendaronk or Neutral confederation, the Iroquois Confederacy or Five Nations (Mohawk, Oneida, Onondaga, Cayuga and Seneca), the Conestoga or Susquehanna, the Erie or Cat nation, the Tuscarora confederation, the Nottaway, the Meherrin, and the Cherokee Group (Elati, Cherokee and Atali).

The Siouan Family possessed a territory even

larger than the Iroquoian, including part of Saskatchewan, western Montana and Wyoming, North and South Dakota, western Minnesota, eastern Nebraska, western Iowa, eastern Kansas, Missouri and the Mississippi Valley to within a hundred miles of the river mouth. There was a small section on the Atlantic coast. Next to the Algonquian, this was the most populous of the Indian Families. This includes the Dakota or Sioux division embracing the Santee, Sisseton, Wahpeton, Yankton, Teton group (Brules, Sans Arcs, Blackfeet, Oglala, and Hunkpapa) and Assiniboin. The Dhegiha division includes the Omaha, Ponca, Quapaw, Osage group, and Kansa. The Chiwere division includes the Iowa, Oto and Missouri. The Winnebago form a division of their own. The Mandan form a division of their own. The Hidatsa division includes the Hidatsa and the Crows. The Biloxi division includes the Biloxi and the Ofo. The Eastern division includes the Monacan confederacy, Tutelo confederacy, Manahoac confederacy, and the Catawba group, with several other smaller groups now extinct.

The Shoshonean Family possessed a territory but little smaller than that of the Siouan, but of a very different character. To it fell the deserts of the Southwest, though in its area there was some fertile and mountainous land beside. It occupied southern Oregon and Idaho, Nevada, Utah and western Colorado, a slice of New Mexico and northern and central Texas. The Hopi form a

division of their own. The Plateau Shoshoneans include the Ute-Chemehuevi group (Chemehuevi, Paiute, Panamint, and Ute), the Comanche group (Comanche, Gosiute and Shoshoni), and the Mono group (Mono, Piaviotso and Bannock). The Kern River Shoshoneans form a division of their own. The Southern California Shoshoneans include the Serrano, the Gabrieleno and the Luiseno-Kawia group.

To the east, a small area was occupied by the Kiowan Family, consisting of one people only, the Kiowa. Their home territory was western Oklahoma. They were a powerful, predatory and hostile tribe, and killed more white men in proportion to their numbers than any other Indian people. For many years they maintained a close alliance with the Comanche and the Kiowa-Apache.

The Caddoan Family appears as three linguistic islands in the Siouan area, or between the Siouan and Shoshonean. One of the islands was the northwestern corner of South Dakota, the second occupied southern Nebraska and northwestern Kansas, the third and largest included eastern Texas, Oklahoma, southeastern Arkansas and northern Louisiana. The northern division is represented by the Arikara (more often written Arikaree). The Middle division is that of the Pawnee-Skidi confederacy. The Southern division includes the Caddo, Kichai and Wichita.

To the east of the largest Caddoan area lay the Muskogean Family, occupying the States of Mis-

Mississippi, Alabama and Georgia, and a strip of northern Florida. The linguistic divisions of this Family are confused, but the more important groups were the Creeks, Choctaw, Chickasaw and Seminole.

Scattering linguistic families on the Atlantic coast were of small importance. On the coast of Newfoundland was the Beothukan Family, with but one tribe, whose custom of painting the body with red ochre caused Sebastian Cabot to call them "red Indians." If not extinct, this Family is very nearly so.

On both the east and the west coasts of the Florida peninsula were tiny groups of the Arawakan Family, the Indians of the West Indies. These Indians landed from Cuba in search of the fabled Fountain of Youth, and it was the story of their quest which, centuries later, sent the Spanish conqueror, Ponce de Leon, on the same hopeless search.

The Timuquanan Family occupied the main part of the peninsula of Florida. The tribes of this Family were easily harassed by fiercer Muskoghean tribes, and, when the Spaniards came, submitted to Christianity and slavery easily. They were deported to Spanish islands and are now almost extinct.

The Uchean Family, so far as known, possessed but a single tribe, the Yuchi, on the Tennessee River. It was allied with the Creek confederacy, but kept itself strictly apart. It is almost extinct.

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The Natchesan, Tonidani and Chitmachan Families, with a tribe or two apiece, occupied the lower Mississippi Valley and the delta. The Attacapan, Tonkawan and Karankawa Families, each of them equally small, occupied the coast lands of Texas. The Coahuiltecan Family, of 22 tribes, lived along the eastern part of the Mexican frontier; their classification is rather among the Mexican Indian groups.

The Pacific Coast is a welter of Families, groups and tribes. Beginning from the Eskimo area in Alaska, the first linguistic families to the southward are the Koluschan, with the Tlingit as the chief people, the Chimmesyan with the Tshimshian in the lead, and the Skittagetan, with the Haida group. South therefrom come the Wakashan Family or the Vancouver Islanders. These peoples still inhabit their ancient territories.

The most populous of all the Pacific Coast Families was the Salishan, inhabiting a large part of British Columbia, northern Washington, northern Idaho, and western Montana. The division is by dialects. The interior division includes Lilloet, Thomsons, Shuswap, Okinagan, Flathead (Spokane, Pend d'Oreilles and Flathead), Cœur d'Alene and Columbia group. The coast division includes Bellacoola, Comox group, Cowichan group, Squawmish group, Songish group, Nisqually group, Twana group, Chehalis group, and Tillamook.

Second only in size to the Salishan Family on

the coast was the Shahaptian, which stretched inland with but a small coastal holding. It occupied southwestern Idaho, southeastern Washington and northeastern Oregon. Once it was of wide range. It includes the Klikitat, Nez Perces, Umatilla, Wallawalla and Yakima. Closely allied to the Shahaptian, both in location and culture character, are the Waiilatpuan, Shastan and Lutuanian Families.

The other linguistic families on the coast are the Chimakan, Kalapooian, Chimarikan, Yakonan, Kusan, Takilman, Copehan, Quoratean, Weitspekan, Yanan, Washoan, Pujunan, Yukilan, Kulanapan, Moquelumnan, Mariposan, Costanoan, Esselenian, Salinan, and Chumashan. Many of these Families have but one or two tribes, yet the Moquelumnan have 35 tribes, the Pujunan 26 and the Mariposan 24. Details of each of these are outside the scope of this brief summary.

The Yuman Family of Lower California represented the lowest in culture of all the Indian tribal groups. Among the better known tribes are the Havasupai, Cocopa, Maricopa, Mohave, Tonto and Yuma. The Serian Family shows close relations to the Yuman.

The Piman Family, inhabiting southern Arizona and a large part of northern Mexico, is a branch of the great Nahuatl stock, from which the Aztecs came. Of this family, the Pima, Papago and some of the Tarahumare alone are found north of the Mexican border.

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There remain only three Families, scattered on the high plateaus of New Mexico, all of whom are classed together as pueblo peoples. The Tanoan family includes the Tewa group (San Ildefonso, San Juan, Santa Clara, Name and Tesuque), Tigua group (Taos, Picuris, Sandia and Isleta), Tano group (almost extinct), Jemez and Piros. The Keresan Family includes the Queres division (Santo Domingo, Santa Ana, Sia, San Felipe and Cochiti), and the Sitsime Division (Laguna and Acoma). The Zuni Family consists only of the tribe inhabiting the pueblo by that name. It should be added that the Hopi, who are Shoshoneans, also are a pueblo people, with Oraibi, Shonkopovi, Mishongnovi, Walpi and Awatobi, as the still existent centers.

This list of the 50 lesser linguistic stocks seems long, no matter how much it may be condensed, but, as here given, any of the important tribes can be picked out and their linguistic affiliations traced.

The material culture areas follow linguistic stocks to some extent, but not always. If a people of a certain linguistic stock which is associated with a definite form of culture migrates into an area where climatic and food conditions vary, a change of culture will result. The desert Apache, which are tribes from a sub-arctic culture, show this alteration markedly. As Wissler states, "the location of these (culture) centers is largely a matter of ethnic accident, but, once located and

the adjustments made, the stability of the environment tends to hold each particular type of material culture to its initial locality, even in the face of many changes in blood and language."

The Nine Culture Areas of the Indians were as follows: Eskimo Area, Mackenzie River Area, North Pacific Coast Area, Plateau Area, Californian Area, Plains Area, Eastern Woodland Area, Southeastern Area, and Southwestern Area. In a consideration of these areas it will appear that peoples of different languages may resemble each other culturally, even as people of different cultures may be related linguistically. The customs following are those which the tribes possessed on their first contact with the white men.

The Eskimo Area is sharply marked out from all others. The fact that the Eskimo live mainly on the sea and depend on sea food does not differentiate them from the tribes of the North Pacific Coast, but they are distinguished from the latter by their habit of living in snow houses on sea ice in winter, and in skin tents or stone huts in summer. Their canoes are umiaks and kayaks, skin-covered. A lamp of soapstone with a wick floating in oil is characteristic, as are snow-goggles, the trussed bow and dog traction. Government is exceedingly primitive, being little above the family group. The ritual of Eskimo religion is slight. A strong pictorial and plastic art exists.

The Mackenzie Area possesses three culture groups. The Northwestern Group, of which the Kutchin may be taken as a type, are hunters of large and small game. Clothing is of skins. There is no weaving done. The skin tent, much the same as that of the Eskimo, is used. The Southwestern Group, of which the Sekani are a type, also make use of quantities of berries. There is no pottery. Utensils are of wood or bark. Rabbit-skins are slit into strips and woven into garments. The typical habitation is a double lean-to. The tribes are timid, even cowardly, though wrestling contests are common. The Eastern Group, of which the Dog Knives are a type, are nomad hunters, also gathering berries and roots. A curious development is that the headmen of the clans form a class of privileged nobles who alone own the hunting grounds. Totemism is universal. Marriage customs are somewhat primitive, as, for example, if a man desires another man's wife he can challenge the husband to a wrestling match, the winner to keep the woman.

The North Pacific Coast Area is a highly complex culture section. The Northern Group, including the Tlingit, Haida and Tsimshian, is characterized by its use of dried fish, clams and berries as the principal food. Cooking is done with hot stones thrown into water-filled wooden boxes. Large rectangular gabled houses are built of upright cedar planks with carved corner-posts and Totem poles reach a high point of carving and

decoration. Canoes are of the dug-out pattern. There is no pottery. Mortars are the only stone vessels. Twine baskets, and mats of cedar bark are found. For weapons the tribes have bow, club, yoni dagger, slat rod and skin armor, wooden helmets, but no chipped tools. The Central Group, with the Kwakiutl and the Bellacoola as types, are of the same culture but famous for their boats, some of these being thirty feet long. Twisted and loosely woven bark or wool takes the place of skins for clothing. Baskets are in checkerwork. Among the Southern Group, with the Coast Salish and Chinook as types, chipped flints occur, especially as arrowheads. Each village is self-governing. All this area possesses a highly developed system of barter, with elk-skins, canoes or slaves as money. (The unit of value, now, is the blanket.) A vast credit system has grown up based on the principle of loaning articles of value at high interest. This is necessary because of the custom of the "potlatch," when an Indian gives a feast to all the members of his clan and makes valuable gifts to each. He repays himself by attending the potlatches of others, where he, in turn, receives gifts. Many of these, however, he already owes as repayment for material borrowed when he gave his own potlatch. The inland Salish are differentiated by garments of raw hides, head-flattening, absence of tattooing, and absence of totem posts.

The Plateau Area lies between the North Pa-

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cific Coast and the Plains. The south is a desert, the north a moist and fertile land. The culture adapts itself—in the several tribes—to these conditions. In general, however, as among the Salish, Thompson, Shushwap and Lillooet, salmon, deer, camas roots and berries are the principal food, these being dried and powdered for storage. The winter houses are semi-subterranean, like circular pits with a conical roof and hole for letting out the smoke; the summer houses being mat or rush-covered tents. The dog is used as a pack animal, not for traction. Dug-out canoes are crudely made. Basketry is highly developed, the coil type being known. Clothing is of deerskins, with blankets of woven rabbit-skin. The sinew-backed bow, clubs, lances and knives are used in war. Wood work is not of a high order; stone work crude, work in bone, metal and feathers very weak. The mode of government is mainly that of the family, the tribal head having little authority.

The Californian Area varies with the number of Families composing it, yet possesses certain striking characteristics. Thus acorns are the chief vegetable food, the acorn flour being made into bread by a complicated process. Wild seeds are also employed, but roots rarely used. Hunting is only of small game. Houses are of many forms from the merest brush shelter to the lean-to made of poles. The dog is not used either for packing or traction. There are no canoes, either dug-out, skin, or bark, only rafts of tule-grass for

ferrying across rivers. No pottery. Basketry highly developed. Clothing scanty, no footwear. The bow, sinew-backed, is the only weapon. There is no war organization, no confederation of tribes, no communal dwellings, no potlatches or organized religious feasts. In rudeness of culture they are little above the Eskimo. The extinct Santa Barbara tribes alone showed advancement.

The Plains Area has a very strongly marked type of culture, dependent mainly upon the buffalo. Roots and berries are used to a limited extent. There is neither fishing nor agriculture. The tepee or tent is general, and readily movable. The dog is used for draught, the travois or dragging poles acting as the vehicle. No baskets, pottery or weaving. Work in skins and bead-work highly developed. Such was the culture of the Assiniboine, Arapaho, Blackfoot, Crow, Comanche, Cheyenne, Kiowa and Teton. On the eastern border a limited use of pottery is found, with some spinning and extensive agriculture. There the tepee alternates with permanent houses covered with grass, bark or earth. Tribes with this culture were the Arikaree, Iowa, Kansa, Missouri, Omaha, Pawnee, Ponca, and Wichita. On the western border the Shoshoni, Uinta and Ute lacked pottery, but made water-tight basketry, and made little use of the buffalo. Of this whole Plains Area, the Dakota or Sioux were the highest type. The woman was autocrat of the home. Chieftainship depended on personal merit and the

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oldest chief ruled. The Sun Dance was the central ceremonial of all Plains tribes. The Pawnee were more agricultural than the Dakota; in mythology and poetry they were especially rich. The Cheyenne were the most typical of all the wandering tribes which followed the buffalo migrations, and they were famous for their courage and the integrity of their moral standard.

The Eastern Woodland Area had developed to a high order of culture. In the north the type of the Ojibway and the Montaignais is marked by the taking of caribou in pens, snaring of game, rabbit-skin weaving, birch canoe, the toboggan, the conical skin or bark-covered shelter, the absence of basketry and pottery, and the use of bark and wooden utensils. In the southern part, the Iroquoian tribes may be taken as type. They cultivate maize, squashes and beans. Wild rice is a staple, and maple sugar is manufactured. Fishing is well developed, especially on the Great Lakes. Pottery is poor, and the only basketry is splint. Two types of shelter prevail, a mat-covered lodge for winter and a bark house for summer. Both dug-outs and bark canoes are used. Snowshoes are of many patterns. The toboggan and dog traction is known. Weaving is of bark fiber. Clothing is of skins, well tanned and well made. No armor nor lances are known, the bow is not sinew-backed. (The tomahawk came in as a later weapon.) Some use of copper in prehistoric times, but feather-work is rare. To the east, both

agriculture and pottery are more widely developed. The Iroquoian tribes make use of the blow-gun, carve elaborate masks from wood, live in large rectangular wooden houses, build fortifications, and are skilled in bone work. In political organization, the Five Iroquois Nations (Mohawk, Oneida, Onondaga, Cayuga and Seneca, afterwards joined by the Tuscarora) were a match for the French and English statesmen. They possessed a system of suffrage, judges, education, a thorough understanding of personal property rights and a political, governmental, religious and social system which made them the masters of the country from Hudson Bay to North Carolina. Among the Cherokee, the Hurons and the Iroquois, the women had an active part in the government.

The Southeastern Area runs from the Mississippi to the Atlantic coast, the characteristic culture being that of the Muskhogean Family, including Creek, Choctaw, Chickasaw and Seminole. The main culture traits are a large use of vegetable food and an intensive agriculture. Maize, millet, pumpkins and watermelons are raised. Wild rice is widely used. Tobacco is grown for purposes of trade. The dog is the only animal eaten, though turkeys and wild fowl are hunted. Fishing is by the use of fish poison. Bears' oil, hickory-nut oil and persimmon bread are characteristic. The houses are rectangular, with curved roofs, often with plaster walls reinforced

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with wicker-work. Towns are fortified with palisades. Canoes are of the dug-out pattern. Clothing is chiefly of deerskin. Fabrics are woven of bark fiber. Baskets are made of cane and splints. The blow-gun is in use, with darts of cane and bone. The pottery is good, the coil process being used. Good work in stone, but little in metal. A characteristic feature was the harvest festival or busk (puskita) when all worn-out clothes, all refuse, all old grain or left-over provisions were gathered into a heap and burned. All the fires in town were extinguished and the priest kindled a new fire, by the use of the drill, from which were made all the fires in town. All malefactors were pardoned, and all debts cancelled.

The Southwestern Area has various characters, but the pueblo peoples may be taken as the type. The culture is characterized by the dependence upon maize and other cultivated foods, the men doing the cultivating and the cloth-weaving. The characteristic feature is the building of stone or adobe communal houses of several stories, built in terrace fashion, the roof of one story forming a promenade for the story above. The various levels are reached by movable ladders. As many as 600 people thus live in one house. The pueblo peoples are agriculturists and understand the art of irrigation. Maize of various kinds, beans and peppers are grown. The turkey is domesticated. Seasonal hunts are usual. Weaving is highly developed, and cotton is grown for textiles. Pottery

is very highly developed, passing beyond practical use and extending to decoration for its own sake. Basketry is astonishingly well made in this area, especially among the non-pueblo tribes. The dog is not used for transportation. Boats are unknown. Work in stone and wood is fair, none in metal. Religion is highly symbolistic, centering mainly about festivals for rain.

A subject that has been much discussed is the population of the Indians at the time of the Spanish discovery, coupled with the statistics of the Indian population of today. The Smithsonian Institution has made a very careful study of the first problem. It is officially stated that, at the coming of the white men, there were not many more than 1,150,000 Indians in North America, a figure which is declared to be accurate within ten per cent. Of this total, 846,000 were within the territory which is now the United States, 220,000 were in Canada, 72,000 in Alaska and 10,000 in Greenland.

The Indian population of today is a much more difficult question to answer. The problem lies in the determination as to what constitutes an Indian. Is a half-breed, a quarter-breed, an Indian? The government has been compelled to take the arbitrary position that those are to be classed as Indians who are obviously of pure race or half-breeds, or those who claim Indian blood. This latter is a shifting basis, for some of the Indian tribes are rich, and white men with as little as a

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sixty-fourth of Indian blood (or less) claim to be Indians in order to get a share in Indian lands. On the other hand, many tribes are poor, or live in a part of the country where the Indian is disesteemed. In such conditions, a quarter-breed probably and an eighth-breed surely, will declare himself to be a white man. Allowing these two figures to balance, the total given of "Indians" is 403,000, a decrease of 65 per cent. since the coming of the white men. To this number must be added at least 600,000 who have Indian blood within three generations.

Small-pox and measles have been the two principal destructive agents to the redskin, for these were diseases unknown to the Indian prior to the coming of the white man and he was not immune to them. The second cause of destruction was the continued forced removal of the Indians from their natural homes, leading to famine. Actual losses in war have been small. Mooney declares that the total number of Indians killed by Spanish, French, British and United States soldiers in four centuries is less than the number who died in one year during a severe small-pox epidemic.

Such were the Indian Families and tribes, such were their customs, and such their numbers. Their origin has been traced back to Neolithic times, and both in physical characters, in language and in culture, a Mongoloid affinity has been observed. Two structural periods have been noted, those of the Mound-Builders in the Mississippi

Valley and those of the Cliff-Dwellers and Pueblo-Builders in the Southwest. In each of these structural periods, the character of the culture lasted until the coming of the white men. The French Jesuit Fathers found the Mississippi Valley mounds occupied, and the Spanish friars met martyrdom among the pueblo peoples.

Yet, in the strict sense, North American Indian History does not exist and can never exist. The Indians of the eight great language stocks which have been described did not devise a calendar. Few of them possessed any other than a primitive mode of calculation. None of them had developed a cursive writing and a literature. Traditions, both of history and religion, were in the keeping of the medicine men, who transmitted them by word of mouth to their disciples, and so on for many generations. This oral tradition—which operates successfully among a stable and unified people—was unavailing among tribes in the savage or barbaric state, some of whom were nomad and few of whom were sedentary. Here and there, scraps of pre-Columbian Indian history can be traced but, in almost every instance, they deal only with one or two tribes, or, at the most, with one or two groups. From them, no adequate generalizations can be made.

The same is true with regard to migrations. The “islands” of linguistic stocks here and there, minor intrusions of one culture into the area of a different culture, words from alien stocks found

in vocabularies, and a score more of similar modes of research may help to give a clue to the greater migrations of the Indians. As yet, however, the evidence found is partly contradictory and certainly does not suffice for the presentation of great racial movements in historical sequence.

The Indian, as the white man found him, was primarily an obstacle to settlement. Both to the Roman Catholic Spanish soldier and to the Protestant English settler, he was an "idol-worshiper and a heathen." To both he was a "savage." Some tribes were easily converted to Christianity, some made alliances with the Whites, but, in general, hostility was expected and hostility was shown. The white men did not find an uninhabited continent, but one sparsely peopled with a complex of brave, intelligent, alert, independent and warlike races, ranging in culture from savagism to barbarism. These were a wall against his progress, a wall which he must batter down.

At the same time, the Indian occupation was of enormous value to the Whites, upon their arrival, for one thing mainly—trails. Some of these trails, true, were made by the great game animals, such as the buffalo, but the trails which the pioneers followed, the trails which opened up the country, were Indian trails. These aboriginal thoroughfares are the key to the pioneer history of America. Some few have been traced out, but much more work is yet to be done on them.

The "Great Iroquois Trail" ran from the Hud-

son to Niagara, through the territory of the Six Nations. It followed the Mohawk River Valley to the watershed of the rivers which flowed northward to the lakes and southward as tributaries of the Susquehanna and Allegheny. Some forty other trails have been traced branching from or leading to this main highway.

The "Kittanning Path" led from Philadelphia into Ohio. It followed the Susquehanna and Juniata Rivers and passed over the mountains at Kittanning Gorge. A fork led through Central Pennsylvania by way of Raystown to the Forks of the Youghiogheny and on to the site of Fort Duquesne.

"Nemacolin's Path" was among the most important of all trails, so far as its relation to later history is concerned. It ran from the Potomac Valley to the junction of the Allegheny and Monongahela. This became known as Braddock's Road.

"The Virginia Warriors' Path" followed the trough between the Blue Ridge and Cumberland Ranges. The main trail held steadily onward to Cumberland Gap, thence through Crab Orchard, Ky., to the Falls of the Ohio at Louisville. The "War Trail of Nations," which descended the Great Kanawha and came into the New River Valley was a branch trail, and it was this which later became known as the Wilderness Road.

The "Great Trail" was the most important line west of the Ohio in revolutionary times, and it

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was, to a large measure, an extension of Nema-colin's Path. It ran from Fort Pitt to Fort Detroit. The trail followed the north bank of the Ohio River from Fort Pitt to the mouth of the Beaver, thence took the watershed to the Crossing-Place of the Muskingum (Bolivar, O.), and so by Wooster, Fremont and the Raisin to Fort Detroit. The "Lake Shore Trail" connected Fort Detroit, Fort Sandusky and Presque Isle. The "Mahoning Trail" connected Fort Pitt and Fort Sandusky by the Beaver and Mahoning Valleys, crossing the watershed to the portage between the Cuyahoga and Tuscarawas Rivers, then following the watershed to rejoin the Great Trail.

The "Venango Trail" was the main landward route to Lake Erie from Fort Duquesne and Fort Pitt. It followed the watershed between the Allegheny and the Beaver straight north.

Second only in importance to the Great Trail was the "Scioto Beaver Trail," the main thoroughfare from the country of the Shawnee to the Delawares. It crossed the watershed at the head of the Hockhocking River, thence to the Tuscarawas Valley near Coshocton, thence to the watershed between the Tuscarawas and the Ohio and met the Great Trail at Painted Post. A second Shawnee trail started also from Lower Shawnee Town on the Scioto and struck east to the Muskingum Valley. Thence it turned south on the watershed between the Muskingum and Ohio to the mouth of the Little Kanawha, crossing the

Ohio there and so by Dry Ridge and Ten Mile Creek into the Monongahela Valley.

The "Scioto War Trail" was the famous trail from the Shawnee to the Cherokee country, and, in later times, was the main route of invasions on Kentucky. It ascended the Sandusky Valley and descended the Scioto Valley to the Ohio. An important branch took the highland watershed between the Scioto and Hockhocking Rivers and crossed the Ohio at the mouth of the Great Kanawha.

The "Miami Trail" and the "Fort Miami Trail" combined to form a trail from the south clear to the northern trails which ran to meet the branches of the Great Trail and the Great Iroquois trail as far as the Great Lakes.

West of the Ohio, generally, the Indian trails followed buffalo trails. In these the general movement was north and south, and the east-and-west trails were branches. Investigation of western Indian warfare, in historic times, shows such to have been primarily north and south, rather than east and west. On passing beyond the Ohio, the lines of the culture areas run north and south and do not greatly intermingle, emphasizing that, from that point, there was little east and west migration. Thus, while it is true of the east that pioneer and frontier trails followed those of the Indians, it is not so true of the west. The great trans-continental highways west of the Mississippi were not laid out for centuries later, and, by this time,

new forces had come into being. The development of each of those overland trails is a part of the later history of the west and is not to be confused with Indian migrations, nor with Indian War and Trade Trails.

There remains to be considered the rights of the white man to the lands of the red man. This is a question which could only be raised of recent years. It is primarily an ethical question. In all treaties of all countries in all centuries the principle is maintained that the right of discovery conveys dominion. As recently as 1907 the United States accepted this principle that savage nations in newly discovered countries have no rights, as in the case of Peary's possession-taking of the North Polar Region for the United States. The Supreme Court of the United States has affirmed this principle, and, on this ground, absolute title to Indian lands belongs to the United States, not to the Indians.

"The Indian right of possession," declared John Quincy Adams, in 1802, "stands, with regard to the greatest part of the country, upon a questionable foundation. Their cultivated fields, their constructed habitations, a space of ample sufficiency for their subsistence, and whatever they had annexed to themselves by personal labor, were undoubtedly by the laws of nature theirs.

"But what is the right of a huntsman to the forest of a thousand miles over which he has accidentally ranged in quest of prey? Shall the liberal

bounties of Providence to the race of man be monopolized by one out of ten thousand for whom they were created? Shall the exuberant bosom of the common mother, amply adequate to the nourishment of millions, be claimed exclusively by a few hundreds of her offspring? Shall the lordly savage not only disdain the virtues and enjoyments of civilization, himself, but shall he control the civilization of a whole world? Shall he forbid the wilderness to blossom like a rose? Shall he doom an immense region of the globe to perpetual isolation and to hear the howlings of the wolf silence forever the voice of human gladness? Shall the fields and the valleys which a beneficent God has framed to teem with the life of innumerable multitudes be condemned to everlasting barrenness? Shall the mighty rivers roll their waters in sullen silence and eternal solitude to the deep? Have hundreds of commodious harbors, a thousand leagues of coast, and a boundless ocean been spread in the front of this land and shall every purpose of utility to which they could apply be prohibited by the tenant of the woods?"

It is the argument of civilization which claims for itself the moral right to allot the earth in proportion to population, to make the soil support as many people as possible; an argument which, at times, is only too apt to express world issues in terms of profit only. Yet its apparent injustice is only part of a larger justice.

In the words of Jefferson, one of the aims of

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humanity is the achievement of "the greatest good to the greatest number." The answer to critics of the United States is the history of the United States. Therein, following upon the labors of Spanish, British, French and Dutch colonists upon the shores of the New World, a great republic has set herself the glorious goal of providing for the hundred millions of her people: "the right to life, liberty and the pursuit of happiness."

THE END

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